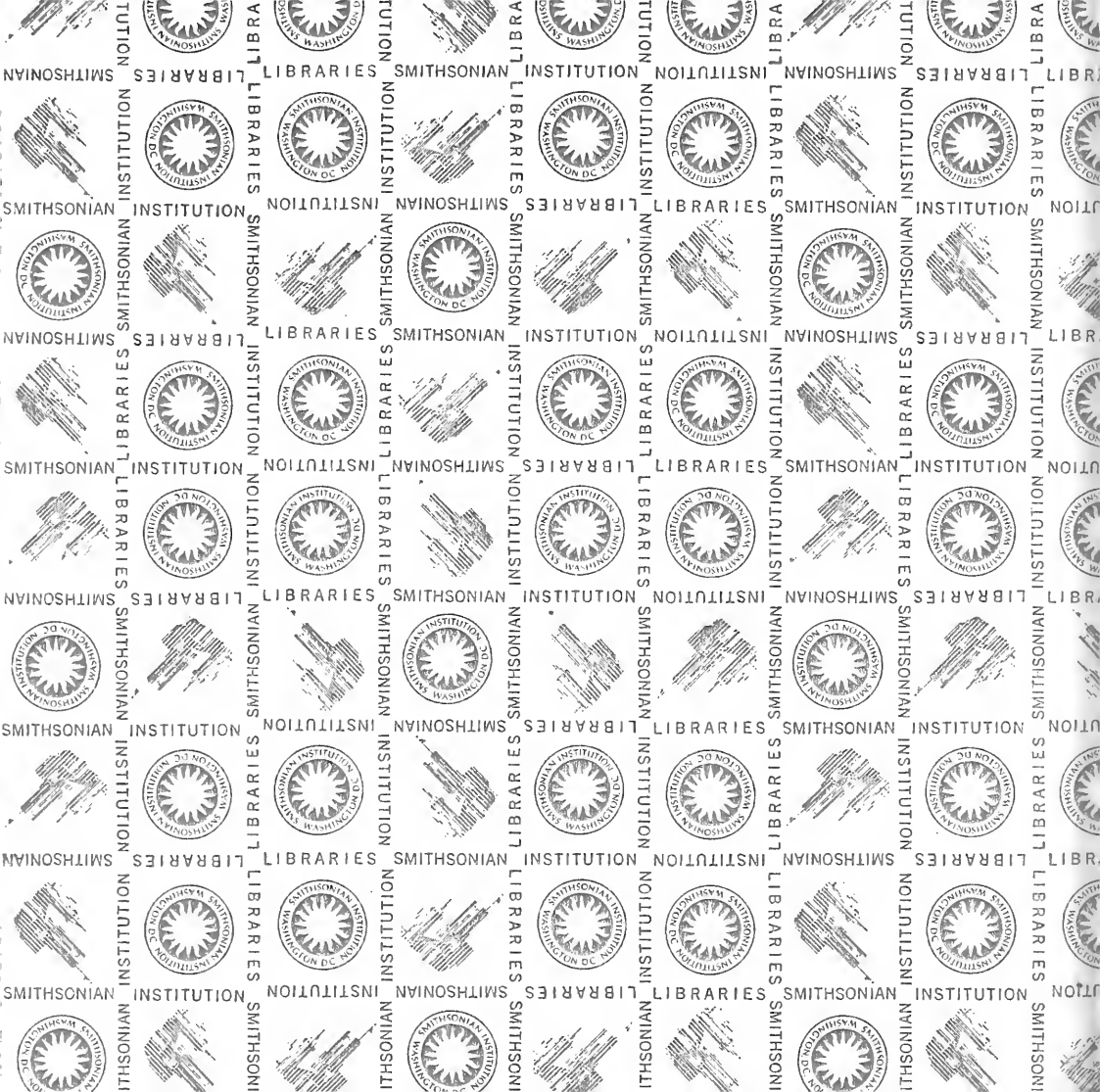
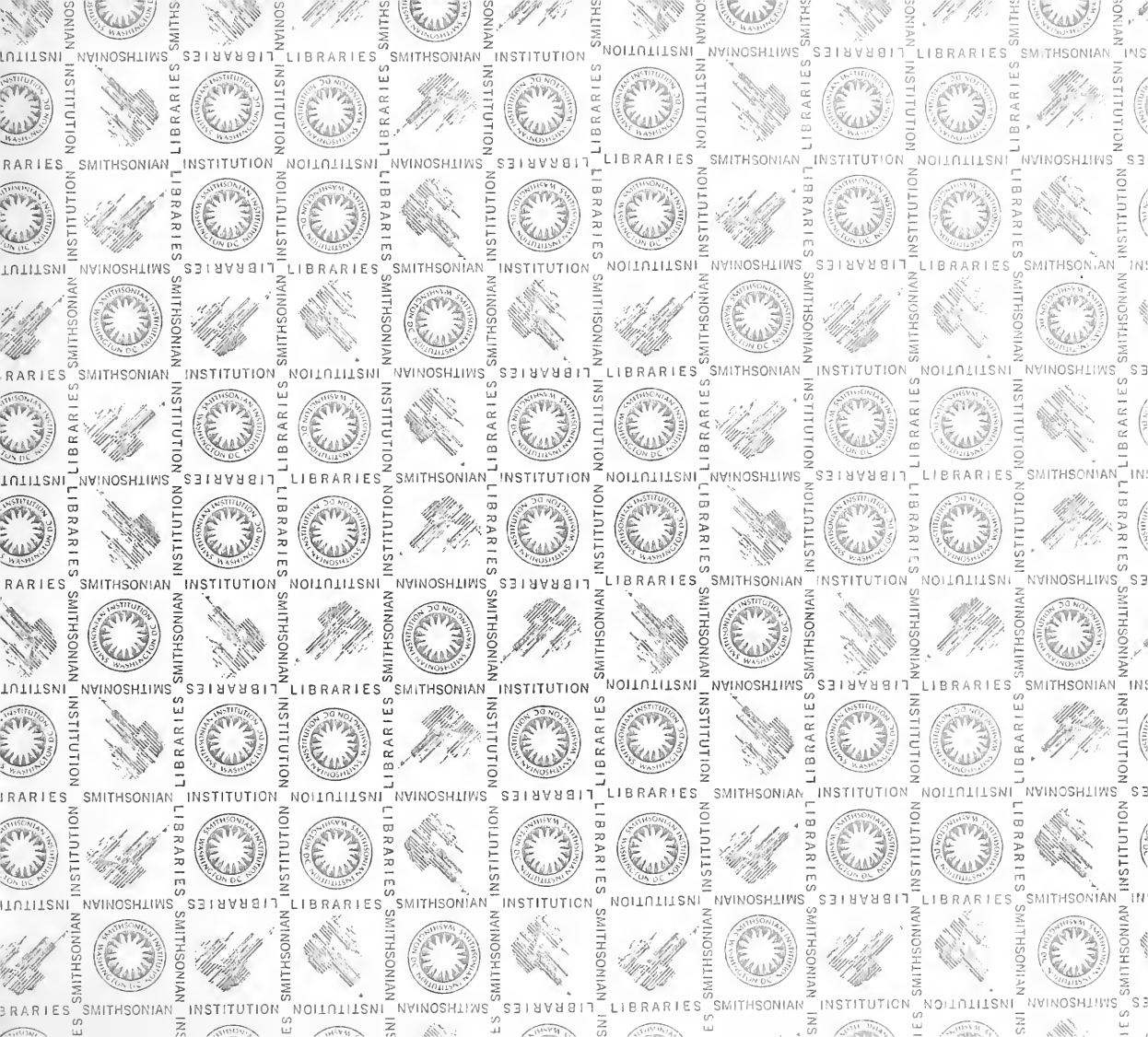


SMITHSONIAN
LIBRARIES







SHIPBUILDING

FROM

ITS BEGINNINGS



SHIPBUILDING FROM ITS BEGINNINGS

BY

E. ^{mile}VAN KONIJNENBURG, C. E.,

ENGINEER OF THE RIJKS WATERSTAAT OF THE NETHERLANDS

1895-1905

PUBLISHED

BY

THE PERMANENT INTERNATIONAL ASSOCIATION
OF
CONGRESSES OF NAVIGATION

EXECUTIVE COMMITTEE — OFFICE OF THE SECRETARY GENERAL

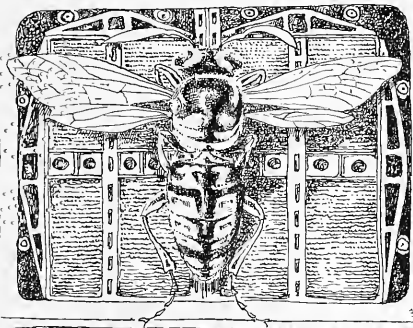
38, RUE DE LOUVAIN, 38

BRUSSELS

VOL. II

U. S. Engineer
School Library
RECEIVED
MAR 17 1919
Washington
Barracks

EX LIBRIS



ST. AME BELGE
D'IMPRIMERIE
3 RUE DU RUISSEAU
BRUXELLES.



MIDDELLANDSCHE ZEE

(Zuidelijk Centrum).

MITTELLÄNDISCHES MEER

(Südlicher Mittelpunkt).

MEDITERRANEAN SEA

(Southern Centre).

MER MÉDITERRANÉE

(Centre Méridional).

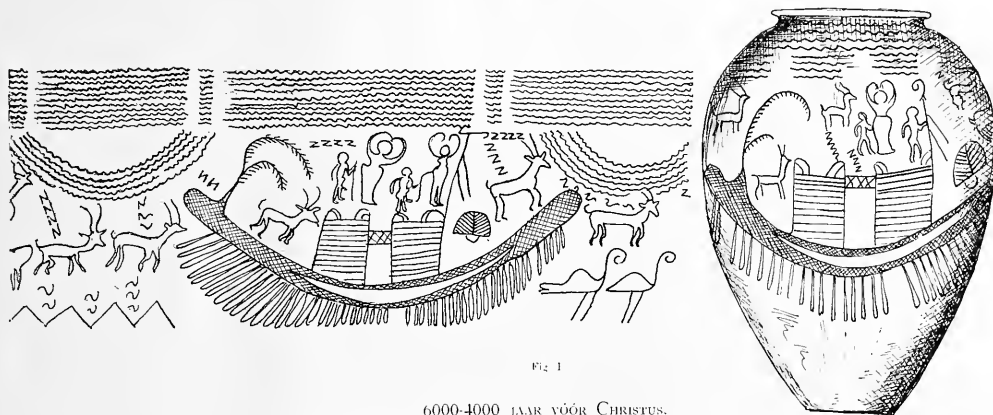


Fig. 1

6000-4000 JAAR VÓÓR CHRISTUS. 6000-4000 YEARS B. C.
 6000-4000 JAHRE VOR CHR. GEB. (MORGAN)
 6000-4000 ANS AVANT J.-CHR.

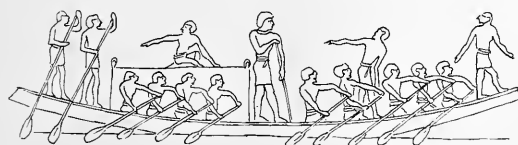


Fig. 2.

Pagaaien.
 (Torr) Men using paddles.
 Pagayeurs.

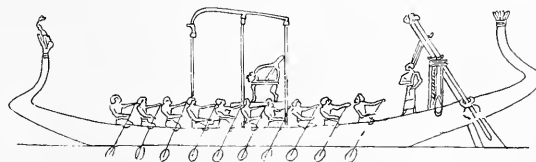


Fig. 3.

EGYPTISCHE SCHEPEN.
 ÄGYPTISCHE SCHIFFE. EGYPTIAN BOATS.
 BATEAUX ÉGYPTIENS.

Ruderen.
 (Torr) Rower.
 Rameurs.

HET GEREED MAKEN VAN PAPIRUS-BOOTJES BIJ DE OUDR. EGYPTENAREN.
 (Rijksmuseum van oudheden te Leiden.)
 DIE HERSTELLING VAN PAPIRUSBOOTJEN DEL DEN ALTEN EGYPTIERN.
 (Altertumsmuseum des States in Leyden.)



Fig. 4

CONSTRUCTION OF PAPIRUS BOATS AMONG THE ANCIENT EGYPTIANS.
 (Museum of antiquities of the State of Leyden.)
 LA CONFECTION DES BARQUETTES EN PAPIRUS CHEZ LES ANCIENS ÉGYPTIENS.
 (Musée d'antiquités de l'État à Leyde.)

PAPIRUSBOOT, DAS
 NOCH JETZT AUF DEN
 TSCHADSEE IN
 GEBRAUCH IST.
 (Schiffproge der
 Eingeborenen.)



PAPIRUS BOAT STILL
 IN USE ON LAKE
 TCHAD.
 Reed canoe of the natives.)

Fig. 5

PAPIRUS BOOTJE ZOALS DIT THANS NOG IN GEBRUIK IS OP HET TCHADMEER.
 BARQUETTE EN PAPIRUS ACTUELLEMENT EN USAGE SUR LE LAC TCHAD.
 (Proge de roseaux des indigènes.)

1. ROEISCHIP; 2. en 3. VRACHTSCHIPPEN DER OUDE EGYPTENAREN.
1. RUDERSCHIP; 2. und 3. HANDELSCHIFFE DER ALTEN ÄGYPTER.

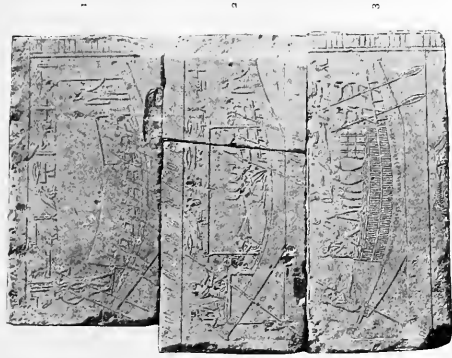


Fig. 6.

1. ROWBOAT; 2. and 3. MERCHANT BOATS OF THE ANCIENT EGYPTIANS.
1. BATEAU A RAMES; 2. et 3. BATEAUX MARCHANDS DES ANCIENS EGYPTIENS.

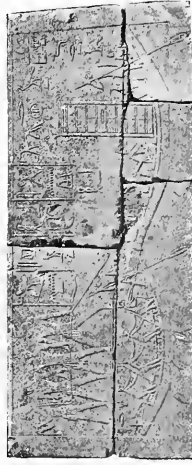


Fig. 7.

- GESKEPT VRACHTSCHIP DER OUDE EGYPTENAREN.
(Grindmonnik, Rijksmuseum van oudheden te Leiden.)

- GESKEPTES HANDELSCHIFF DER ALTEN ÄGYPTER.
(Grindmonnik in staatliken Akhetumuseum in Leyden.)

- TAWED MERCHANT VESSEL OF THE ANCIENT EGYPTIANS.
(Funeral monument, Museum of antiquities of the state of Leyden.)

- BATEAU MARCHAND REMORQUÉ DES ANCIENS EGYPTIENS.
(Monument funéraire, Musée d'antiquités de l'État à Leyde.)

MODEL OUD EGYPT-SCHIP. (MIDDELRIJK ± 2200-1800 VÓÓR CHRISTUS).
(Museum van oudheden, te Leiden.)



Fig. 8.



Fig. 8

MODELL EINES SCHIFFES AUS ALT-ÄGYPTEN
(MITTLERES REICH ± 2200-1800
VOR CHR. GEB.).
(Altertumsmuseum, in Leyden.)

MODEL OF AN ANCIENT EGYPTIAN VESSEL
(MIDDLE EMPIRE, ABOUT 2200-1800
B. C.).
(Museum of antiquities of Leyden.)

MODÈLE D'UN BATEAU DE L'ANCIENNE EGYPTÉ. (MOYEN EMPIRE ± 2200-1800
AVANT JÉSUS-CHRIST).
(Musée d'antiquités de Leyde.)

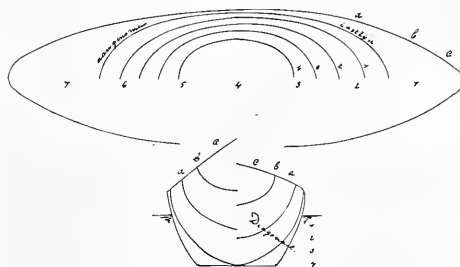


Fig. 9.

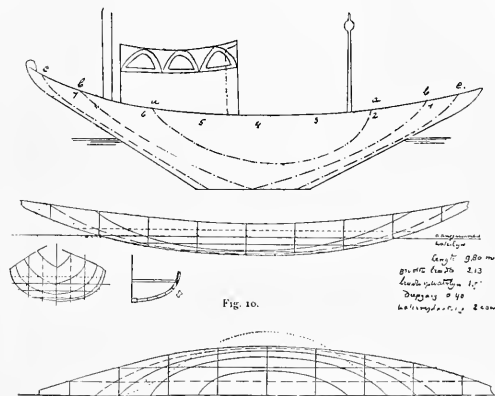


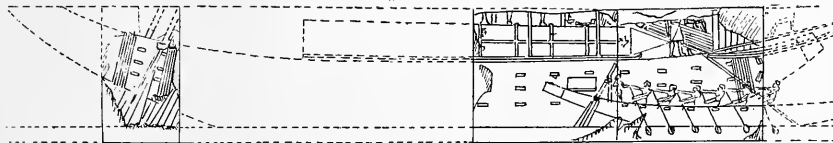
Fig. 10.

VERVOER VAN EEN OBELISK. (1600 v. Chr.).
TRANSPORTATION OF AN OBELISK. (1600 B. C.).

(HOLMES)

BEFÖRDERUNG EINES OBELISKEN. (1600 v. Chr. Geb.).
TRANSPORT D'UN OBELISQUE. (1600 av. J.-Chr.).

Fig. 11.



HET OPZETTEN DER GAFFELS OM HET KOORD, DAT HET DOORZADELEN
VAN HET SCHIP MOET VOORKOMEN, VAST TE ZETTEN.

DAS AUFSTELLEN DER GAFFELN (GEBELN)
ZUR BEFESTIGUNG DES TEUES, DAS DIE
LÄNGSBIEGUNG DES SCHIFFS VERHINDERN
SOLL.



Fig. 12.

LE PLACEMENT DES FOURCHES DESTINÉES A FIXER LE CABLE QUI DOIT
EMPÊCHER LA FLEXION LONGITUDINALE DU BATEAU.

POSITION OF THE FORKS INTENDED TO
FIX THE CABLE WHICH PREVENTS THE BOAT
FROM SAGGING LONGITUDINALLY.

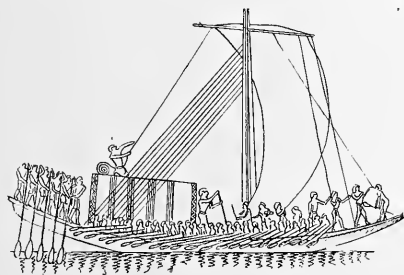


Fig. 13.

ÄGYPTISCHE HANDELSCHIFFE.
(Altes Reich.)

EGYPTISCHE HANDELSCHIFFEN.
(Oude rijk.)

EGYPTIAN MERCHANT VESSELS.
(Ancient Empire.)

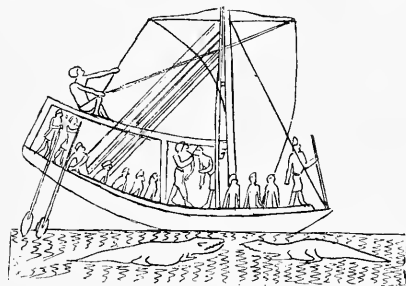


Fig. 14

NAVIRES MARCHANDS ÉGYPTIENS.
(Ancien Empire.)

oud Egypte :

1. Kleinood voorstellende een roeischip.
(Rijksmuseum van oudheden te Cayro.)
- 2, 3 en 4. Roeischip der oude Egyptenaren
uit het Middelrijk ± 2200-1000 vóór
Christus.

(Rijksmuseum van oudheden te Leiden.)

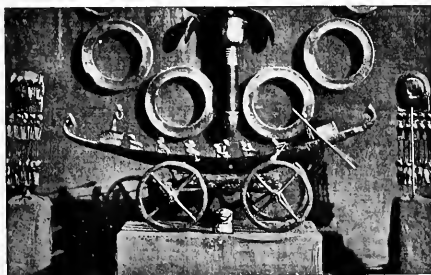


Fig. 15.

Altes Ägypten :

1. Kleinod mit Darstellung eines Ruder-
schiffes.
- 2, 3 und 4. Ruder Schiff der Alten Ägypter :
Mittleres Reich ± 2200-1000 vor Chr-
geb.

(Altertumsmuseum des Staates in Kairo.)

ANCIENT EGYPT :

1. Jewel representing a vessel with oars.
- 2, 3 and 4. Vessel with oars of the
Ancient Egyptians, Middle Empire
± 2200-1000 B. C.

(Museum of antiquities of the State of Cairo.)



Fig. 16.

ANCIENNE EGYETE :

1. Bijou représentant un bateau à rames.
- 2, 3 et 4. Bateau à rames des anciens
Égyptiens, Moyen Empire ± 2200-1000
avant J.-C.

(Musée d'antiquités de l'Etat, Le Caire.)



3



4

Fig. 10.

SCHIEPEN NAAR HET LAND PUNT.
(Nieuwe Ryk.)

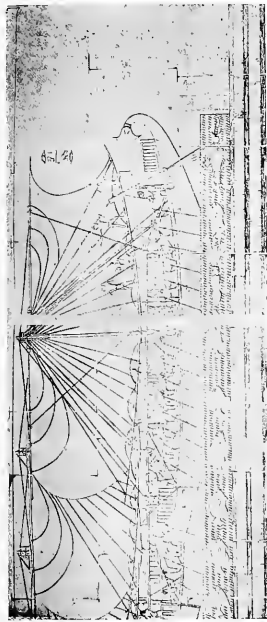


Fig. 17.

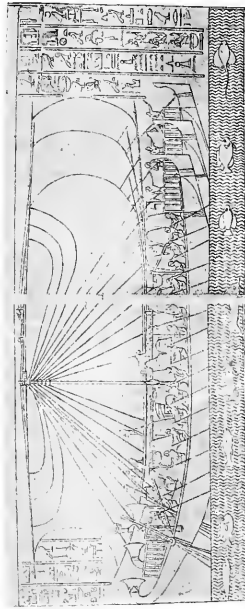


Fig. 18.

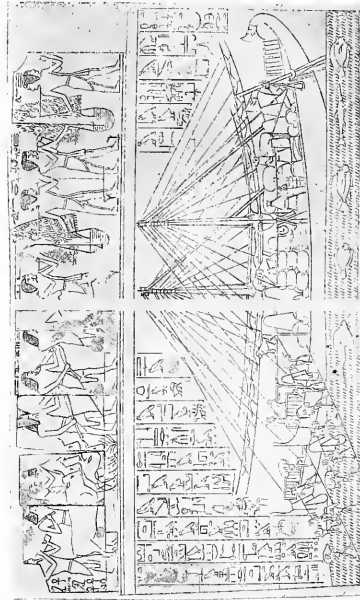


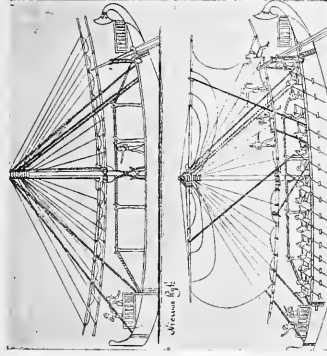
Fig. 19.

SCHIFFE, DIE ZWISCHEN ÄGYPTEIN UND DEM LANDE
« PUNT » VERKEHREN.
(Neues Reich.)

VESSELS TRADING BETWEEN EGYPT AND THE LAND
OF « PUNT ».
(New Empire.)

NAVIRES TRAFIQUANT ENTRE L'ÉGYPTÉ ET LE PAYS DE « PUNT ».
(Nouvel Empire.)

SCHIFFEN NAAR HET LAND « PUNT ».
(Nieuwe Rijk).



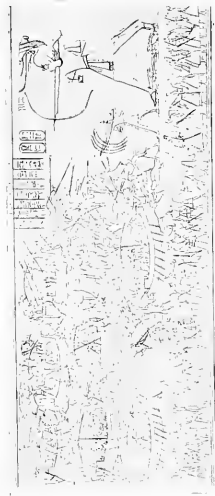
SCHIFFE DIE ZWISCHEN ÄGYPTEN
UND DEM LANDE « PUNT » VER-
KEHREN.
(Neues Reich).

VESSELS TRADING BETWEEN EGYPT
AND THE LAND OF « PUNT ».
(New Empire).

NAVIRES TRAQUOIENT ENTRE
L'EGYPTE ET LE PAYS DE « PUNT ».
(Nouvel Empire).

Fig. 20.

SLAG VAN RAMSES III
TEGEN DE BARBAREN.
(Plaat van Rosellini.)



SCHLACHT
DES RAMSES III
GEGEN
DIE BARBAREN.
(Tafel von Rosellini.)

BATTLE
OF RAMSES III
WITH
THE BARBARIANS.
(Plate by Rosellini.)

Fig. 21.

BATEAU LIVRE PAR RAMSES III
CONTRE LES BARBARES.
(Plaque de Rosellini.)

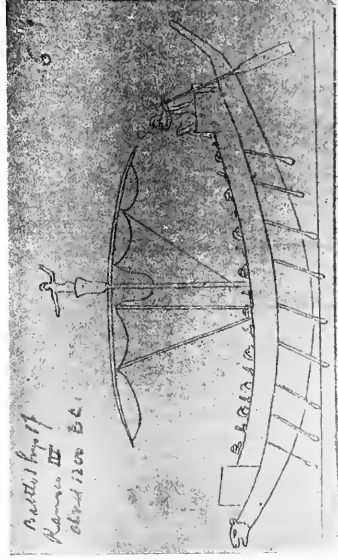


Fig. 22.

EIN DER SCHIFFEN.
ONE OF THE VESSELS.

EIN DER SCHIFFE.
UN DES BATEAUX.

PHÉNICIE (LAYARD)
± 700 JAAR VÓÓR CHRISTUS.

PHÖNIZIEN (LAYARD)
± 700 JAHRE VOR CHR. GEB.

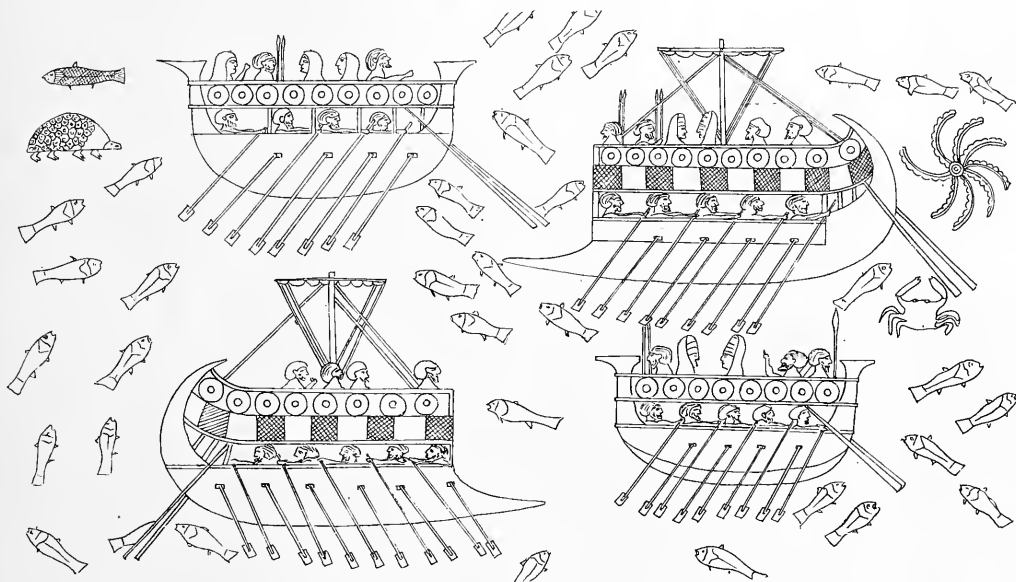


Fig. 23.

PHÉNICIA (LAYARD)
ABOUT 700 B. C.

PHÉNICIE (LAYARD)
± 700 AVANT JÉSUS-CHRIST.

GRIEKSCHE SCHEPEN.

GRIECHISCHE SCHIFFE.

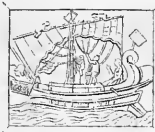


Fig. 25.

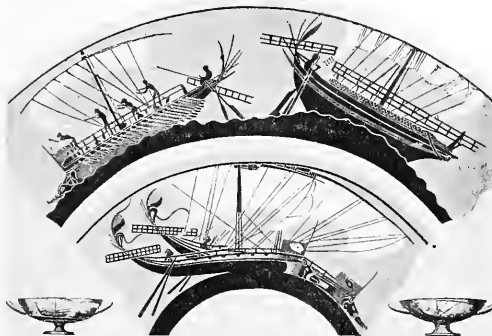


Fig. 24.

GREEK VESSELS.

NAVIRES GRECS.



Fig. 27.



Fig. 26.

ROMEINSCHE SCHEPEN (± 200 JAAR VÓÓR CHRISTUS).

(Vergelijk fig. 66 en 67.)

ROMISCHE SCHIFFE (± 200 JAHRE VOR CHR. GEB.).

(Siehe Abb. 66 und 67.)



Fig. 28.

ROMAN VESSELS (ABOUT 200 B. C.).

(Compare figs 66 and 67.)

NAVIRES ROMAINS (± 200 AVANT JÉSUS-CHRIST).

(Voir fig. 66 et 67.)

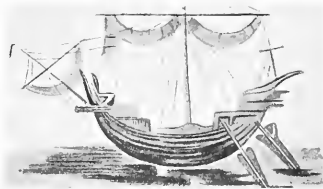


Fig. 29.

GRAFMONUMENT.
(Museum van oudheden te Leiden.)

FUNERAL MONUMENT.
(Museum of antiquities of Leyden.)



GRABDENKMAL.
(Im Staatlichen Altertumsmuseum in Leyden.)

MONUMENT FUNÉRAIRE.
(Musée d'antiquités de Leyde.)

Fig. 30.

ROMEINSC HANDELSSCHIP.
(Relief Kathedraal van Salerno.)

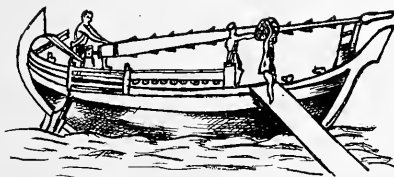


Fig. 31.

RÖMISCHES HANDELSCHIFF.
(Relief der Kathedrale von Salerno.)

ROMAN MERCHANT SHIP.
(Relief of the cathedral of Salerno.)

NAVIRE MARCHAND ROMAIN.
(Relief de la cathédrale de Salerno.)

ROMEINSC HANDELSSCHIP.

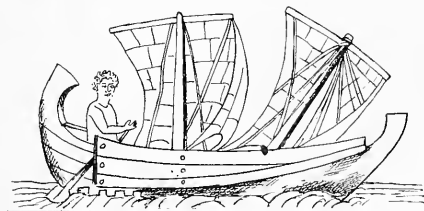


Fig. 32.

RÖMISCHES HANDELSCHIFF.

ROMAN MERCHANT SHIP.

NAVIRE MARCHAND ROMAIN.

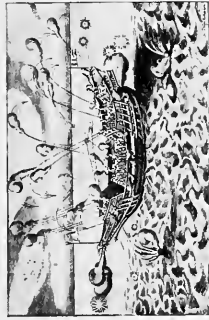


Fig. 33.
SCHIFF DER MITTELMEERISCHE ZEE.
MITTELMEER-SCHIFF. MEDITERRANEAN SHIP.
NAVIRE DE LA MEDITERRANEE.
(Farenbach 1829.)



Fig. 34.
GALEI.
GALERIE. (Farenbach 1829.)
GALLEY.
GALERE.

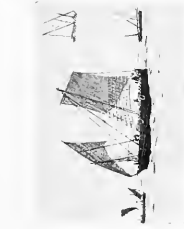


Fig. 35.
KARKABE ARABE.
ARABISCHE KARKAB.
ARABIAN KARKAB.
(Tunis.)



Fig. 36.
KARKABE TUNISEN.
TUNISCHE KARKAB.
TUNISIAN KARKAB.

Fig. 36.
GALEEN.
GALERIE. GALLEYS.
(Van Yk 1872.)



RELIEF.
TURM ZU PISA.
(Siehe den doppelten
Vordersteven mit
der Karkab.)



RELIEF.
TOWER OF PISA.
(Compare the double
stem with the
Karkab.)

Fig. 39.
RELIEF TORES VAN PISA.
(Vergelijk dubbele voorsteven
met de Karkab.)



Fig. 40.
GALEI.
GALERIE. GALLEY.
(Louvre, Paris.)

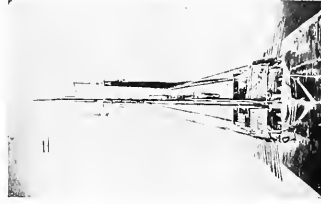
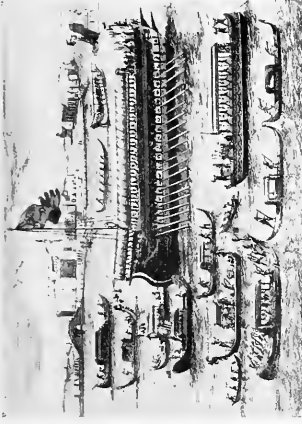


Fig. 41.
GALEI.
GALERIE. GALLEY.
(Louvre, Paris.)



SCHIPPEN VAN VENETIË,
« BOGENTAUER »
NAUIGES VENTURIEN.

VENETIANSCHE SCHIPPE,
« BOGENTAUER »
VENETIAN VESSELS.

Fig. 42.

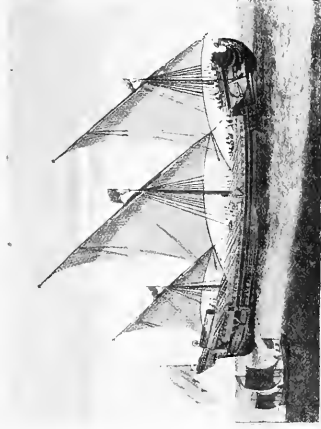


Fig. 43.



Fig. 44.

Fig. 45.

GALLIËSE. GALLIËSE.



Fig. 46.

GALLIËSE. GALLIËSE. GALLIËSE.
(Louvre, Paris.)

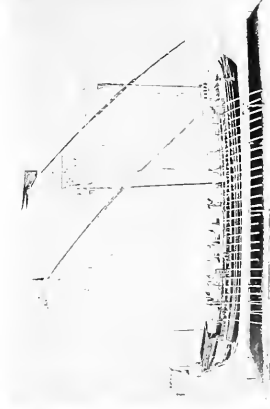


Fig. 47.



Fig. 48.
Chébec mit latinsche Zellen.
Schelcke mit lateinischen Segeln. — 1750-1780. Xebec with latin sails.
Chébec à voiles latines.



Fig. 49.
Chébec mystique.
1750-1780.
Mystic Xebec.



Fig. 50.
Chébec Polaire.
1870.
Polar Xebec.



Fig. 51.
Bombardier galbot — Bombardier-Galiet. — Bomb Ketch. — Galiste à bombe.



Fig. 52.
Tartane.

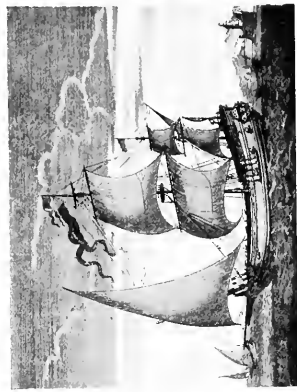


Fig. 53.
Polacker. — Polaire. — Polar.



Fig. 54.

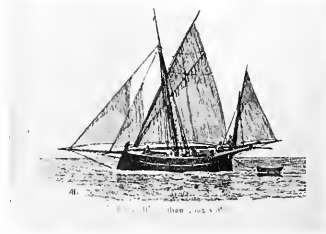


Fig. 55.



Fig. 56.



Fig. 58.

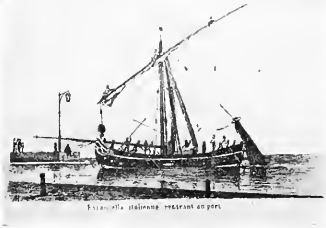


Fig. 57.



Fig. 59.



Fig. 60.

DE « SANTA MARIA » HET SCHIP VAN
COLUMBUS.

DIE « SANTA MARIA »
DES CHRISTOPH COLUMBUS

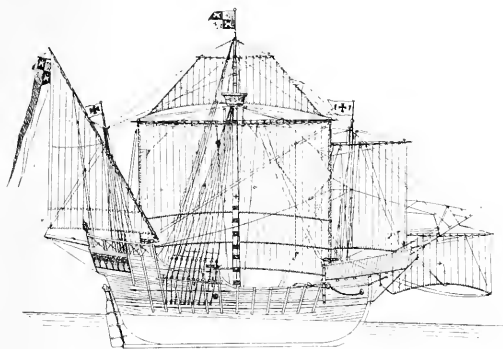


Fig. 61.

THE « SANTA MARIA »
OF CHRISTOPHER COLUMBUS.

LA « SANTA MARIA »
DE CHRISTOPHE COLOMB.

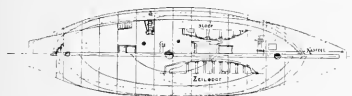


Fig. 62.

SANTA MARIA.

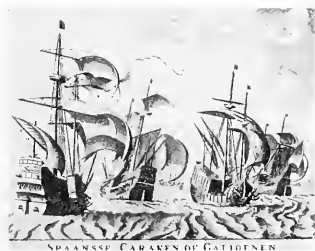


Fig. 63.

(Van Vl.)

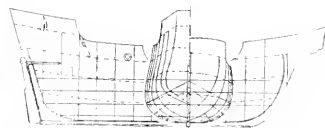


Fig. 64.

HOLMEN : ANCIENT AND MODERN SHIPS, p. 182.

ENTRADA NAZAS — A. 1890. — Portugal. Praia de Areia de F. de



Fig. 65.

PRIMA DE ESTUDO



Fig. 66.

NAZAS — Portugal. Vento forte de praia



Fig. 67.



Fig. 68.

ALMADA — Portugal. Vento de praia

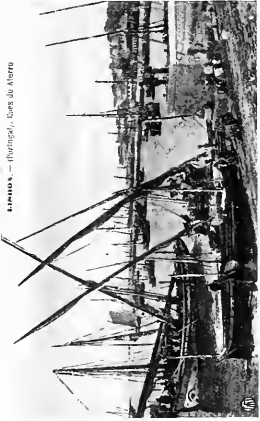


Fig. 69.

POVO DO LIMA — Portugal — Barro de caga.



Fig. 70.



OOSTZEE

(Noordelijk Centrum).

OSTSEE

(Nördlicher Mittelpunkt).

BALTIC SEA

(Northern Centre).

MER BALTIQUE

(Centre Septentrional).



OUDE OPGEGRAVEN VIKINGERSCHEPEN



Fig. 72.



Fig. 73.

ANCIENT VIKING VESSELS (UNEARTHED)



Fig. 74.

ALTE WIKINGERSCHIFFE (AUSGEGRABEN)



Fig. 74.

ANCIENS NAVIRES DES VIKINGS (EXHUMÉS)



OUDE VIKINGERSCHIPPEN.
(Museum te Kristiania.)

ALTE VIKINGERSKIPPE.
(Museum von Christiania.)

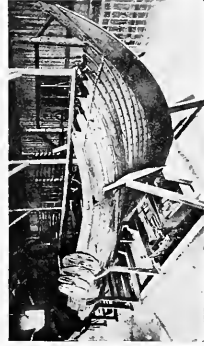


Fig. 75.

ANCIENT VIKING VESSELS.
(Christiania Museum.)

ANTIENS NAVIRES DES VIKINGS.
(Musée de Christiania.)



Fig. 76.



Fig. 77.



Fig. 78.

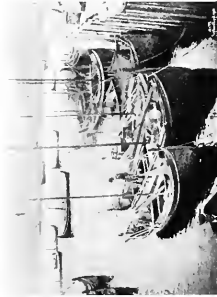


Fig. 79.



Fig. 80.



OOSTZEE EN BOTNISCHE GOLF

OSTSEE UND BOTNISCHER MEERHUSEN

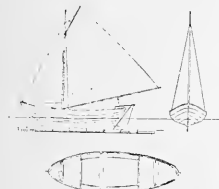


Fig. 81.



Fig. 82.



Fig. 83.

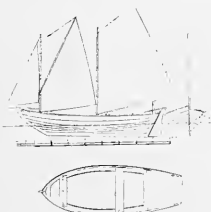


Fig. 84.



Fig. 85.

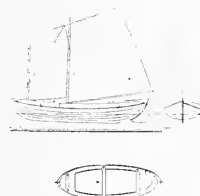


Fig. 86.

BALTIC SEA AND GULF OF BOTHNIA

MER BALTIQUE ET GOLFE DE BOTHNIE

VISSCHERSVAARTUIGEN - OOSTZEE.



Fig. 87.

FISCHEREIFAHRZEUGE, DER OSTSEE.



Fig. 88.

FISHING BOATS OF THE BALTIC SEA.



Fig. 89.

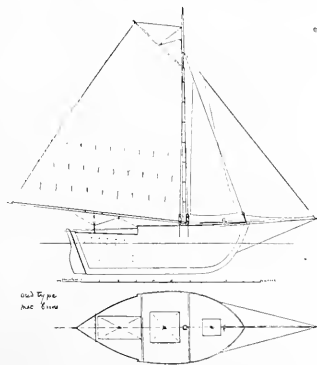


Fig. 90.

BATEAUX DE PÊCHE DE LA MER BALTIQUE.



Fig. 91.

VAARTUIGEN VAN LAPLAND, WAARMEDE DE STROOMVERSNELLINGEN BEVAREN WORDEN.



Fig. 92.

FAHRZEUGE VON LAPLAND, ZUM BEFAHREN DER STROMSCHNELLEN.



Fig. 93.



Fig. 94.

LAPLANDER BOATS USED FOR RUNNING THROUGH RAPIDS.



Fig. 95.

EMBARCATIONS DE LA LAPONIE, SERVANT A TRAVERSER LES RAPIDES.

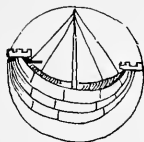


Fig. 96.
1200.



Fig. 97.

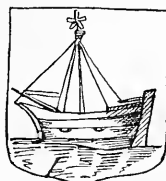


Fig. 98.

HARDERWYK.
14^e EEUW.

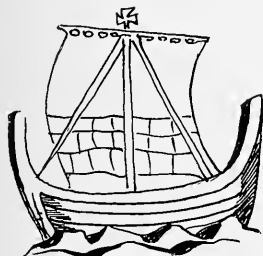


Fig. 99.
1437.



Fig. 100.
BOSTON 1375.

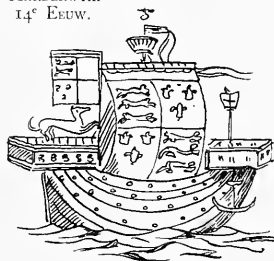


Fig. 101.

14^e EEUW.
14. JAHRHUNDERT. — 14TH CENTURY.
14^e SIECLE.

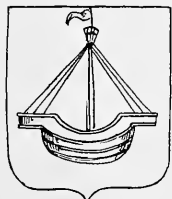


Fig. 102
13^e EEUW.

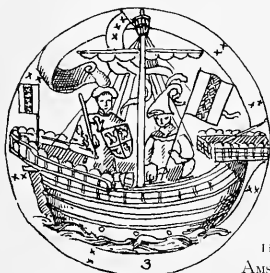
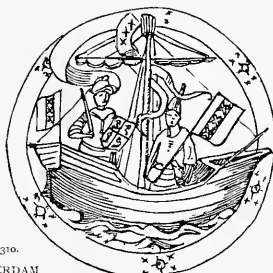


Fig. 310.
AMSTERDAM



15^e EEUW. — 15. JAHRHUNDERT. — 15TH CENTURY. — 15^e SIECLE.
KOGGESCHIP. — KOGGE. — COG. — COGUE.

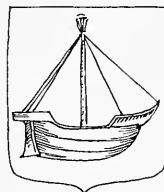


Fig. 104.
13^e EEUW.



Fig. 105.

13^e EEUW. — 13. JAHRHUNDERT.

13th CENTURY. — 13^e SIECLE.



Fig. 106.

SIEGEL DER STADT POOLE.

SEAL OF THE TOWN OF POOLE.

SCEAU DE LA VILLE DE POOLE.



Fig. 107.

SIEGEL DER GRAFSCHAFT RUTLAND.

SEAL OF THE COUNTY OF RUTLAND.

SCEAU DU COMTE DE RUTLAND.



Fig. 108.

SIEGEL VON DAMME. — SEAL OF DAMME.

SCEAU DE DAMME.



Fig. 109.

13^e EEUW. — 13. JAHRHUNDERT.

13th CENTURY. — 13^e SIECLE.

KOGGESCHIP. — KOGGE. — COG. — COGUE.



Fig. 110.

SIEGEL VON DOVER. — SEAL OF DOVER.

SCEAU DE DOUVRES.

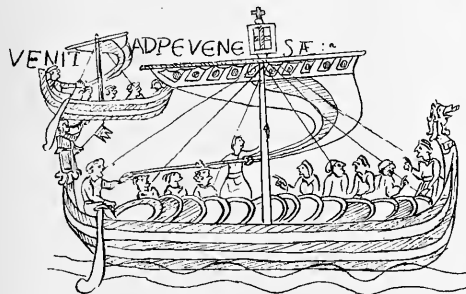


Fig. 112.

TAPIJTWERK VAN BAYEUX.

WANDTEPPICH 1066 BAYEUX
VON BAYEUX. (HOLMES) TAPESTRY.

TAPISSERIE DE BAYEUX.

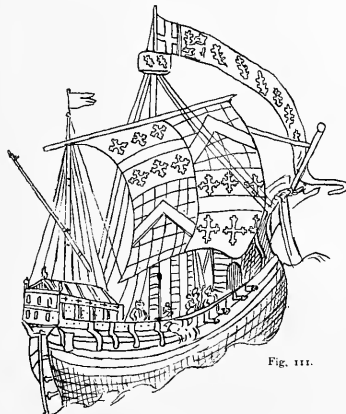


Fig. 111.

15^e EEUW.
15. JAHRHUNDERT (HOLMES) 15TH CENTURY
15^e SIÈCLE.

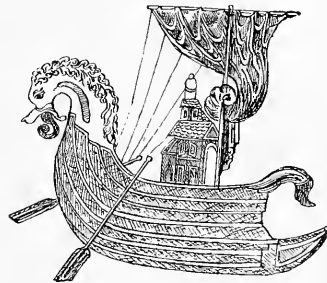


Fig. 113

900 NA CHR.
VAN EEN OUDE ANGELSAXISCHE KALANDER.

900 NACH CHR. GEB. 900 A. C.
NACH EINEM ALTEN (HOLMES) ACCORDING TO AN OLD
ANGEL-SÄCHSISCHEN ANGLO-SAXON
KALENDER. CALENDAR.

900 APRÈS J.-CHR.
D'APRÈS UN ANCIEN CALENDRIER
ANGLO-SAXON.

SLAG OP DE MAAN (1351).

SCHLACHT AN DER MAAS (1351).

BATTLE OF THE MEUSE (1351).

BATAILLE SUR LA MEUSE (1351).

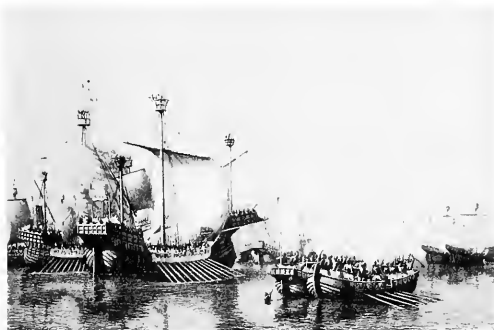


Fig. 114.



Fig. 115.

SLAG OP DE GOUWE (1304).

SCHLACHT AN DER GOUWE (1304).

BATTLE OF THE GOUWE (1304).

BATAILLE SUR LA GOUWE (1304).



Fig. 116.

INNEMING VAN DAMIATE (1218).

(Naar Schotel.)

EINNAHME VON DAMIETTE (1218). TAKING OF DAMIETTE (1218).

(Nach Schotel.)

(According to Schotel.)

PRISE DE DAMIATE (1218).

(D'après Schotel.)

INLADING VAN TROEPEN.
(Miniatur van 1488.)

EMBARCARKING TROOPS.
(Miniature of 1488.)

Fig. 117.

VLAAMSCH E MINIATUUR, EINDE 15^e EEUW.
(Philips van Kleef.)

FLÄMISCHE MINIATUR,
ENDE DES 15. JAHRHUNDERTS.
(Philipp von Cleve.)

FLEMISH MINIATURE,
END OF THE 15TH CENTURY.
(Philippe van Cleef.)

MINIATURE FLAMANDE, FIN DU 15^e SIÈCLE.
(Philippe de Cleves.)

Fig. 118

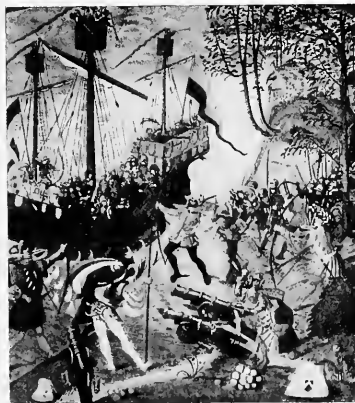


Fig 118

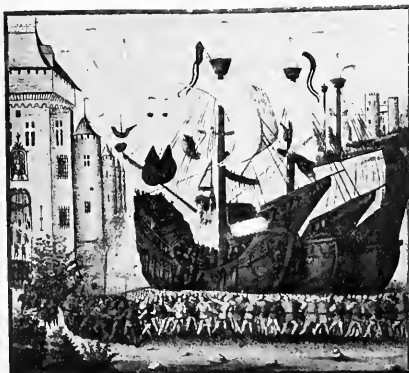


Fig. 117.

EINSCHIFFUNG VON TRUPPEN.
(Miniatur von d. J. 1488.)

EMBARQUEMENT DE TROUPES.
(Miniature de 1488.)

Fig. 117.

SCHIP MET 24 STUKKEN (1482).
(Miniatur.)

SCHIFF MIT 24 KANONEN (1482).
(Miniatur.)

24 GUN SHIP (1482).
(Miniature.)

NAVIRE AVEC 24 PIÈCES (1482).
(Miniature.)

Fig. 119.

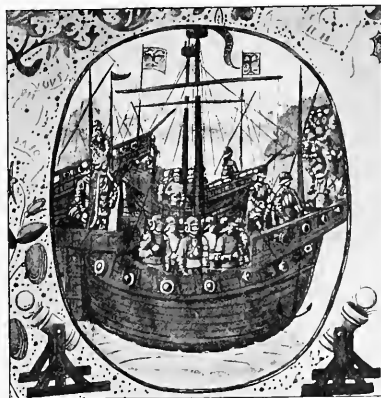


Fig 119.

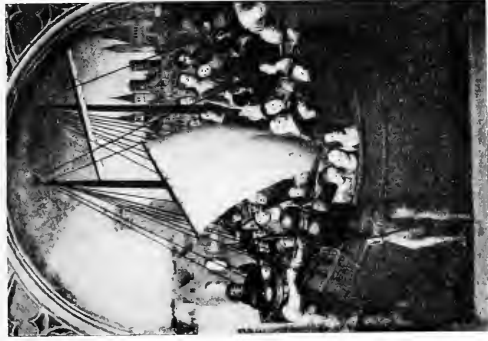


Fig. 120.

15^e eeuw.

15. JAARHUNDERT. — 15^{de} CENTURY.

15^e siècle.



Fig. 121.

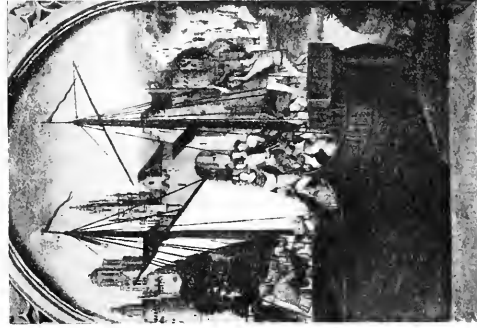


Fig. 122.

BRUGGE : HOSPITAL ST-JEAN.

BAYEGE : HOSPITAL ST-JOHN. — BRUGES : ST-JOHN'S HOSPITAL.

BRUGES : HÔPITAL ST-JEAN.

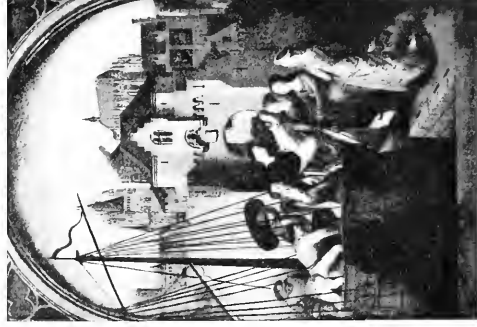


Fig. 123.

BRUGGE : HOSPITAL ST-JEAN.

BAYEGE : HOSPITAL ST-JOHN. — BRUGES : ST-JOHN'S HOSPITAL.

BRUGES : HÔPITAL ST-JEAN.



RANGE
Gravure flamande (1400-1450)
(Dét. par l'auteur E. x 18 cm.)

Fig. 125.

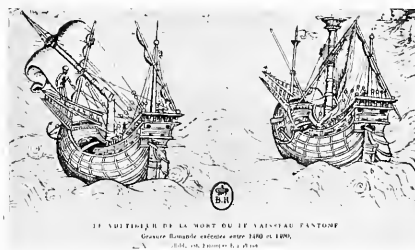


Fig. 124.

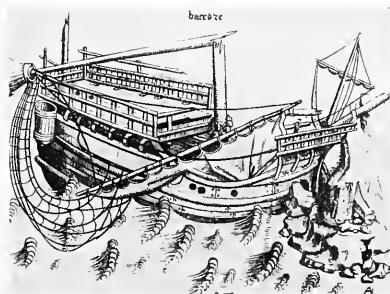
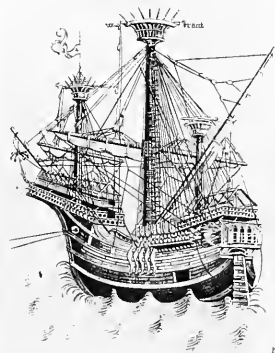


Fig. 126.



CARNAVAL, Arnhem
Gravure flamande (1400-1450)
(Dét. par l'auteur E. x 18 cm.)

Fig. 127.

VLAAMSCH GRAVUREN 15^e EEUW (MEESTER W. A.).

FLÄMISCHE STICHE AUS DEM 15. JAHRHUNDERT (MEISTER W. A.).

FLEMISH ENGRAVINGS OF THE 15TH CENTURY (W. A. MAÎTRE).

GRAVURES FLAMANDES DU 15^e SIÈCLE (MAÎTRE W. A.).

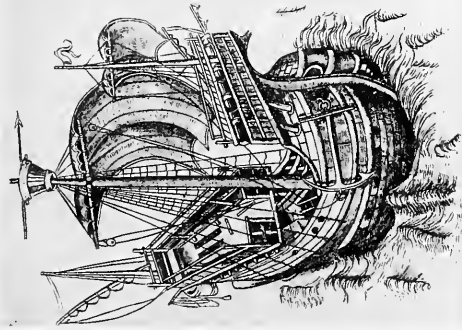


Fig. 128

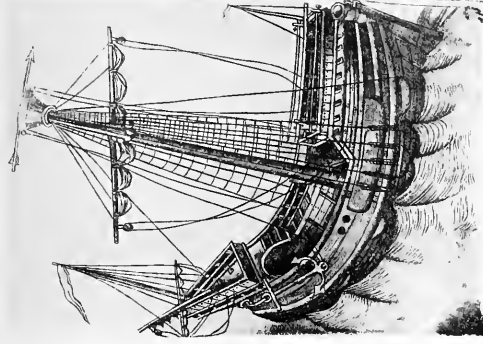


Fig. 129

VLAAMSCHE GRAVUREN, 15^e EEUW (MEESTER W. A.).

FLÄMISCHE STICHE AUS DEM 15. JAHRHUNDERT (MEISTER W. A.). FLEMISH ENGRAVINGS OF THE 15TH CENTURY (W. A. MAITRE).

GRAVURES FLAMANDES DU 15^e SIECLE (MAITRE W. A.).

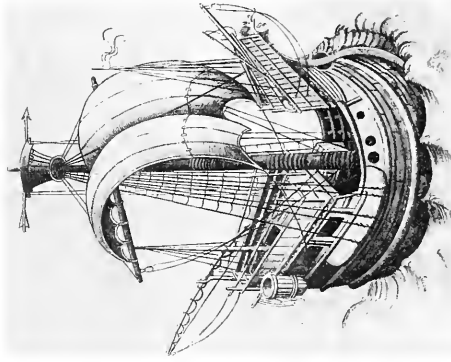


Fig. 130

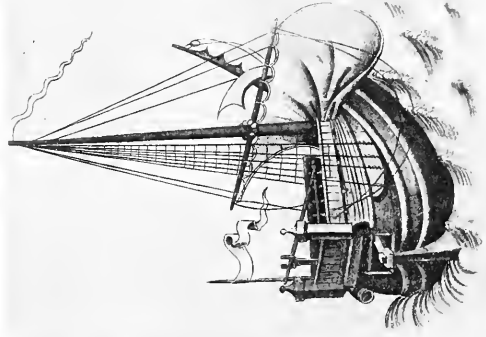


Fig. 131



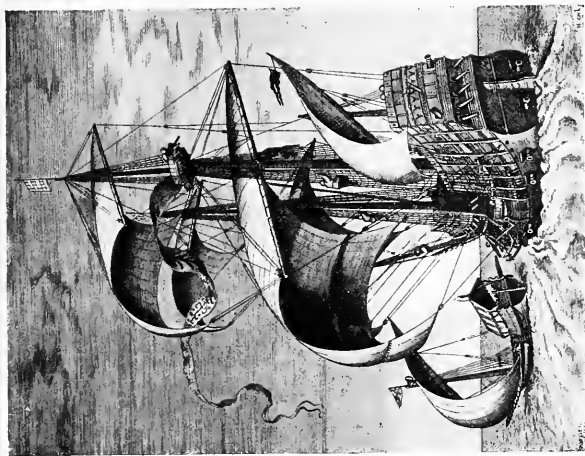


Fig. 122



Fig. 123

(Pencil)



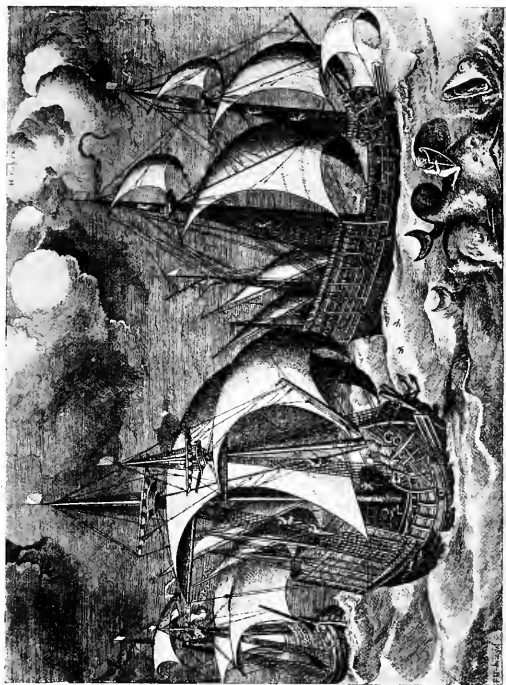


Fig. 134.

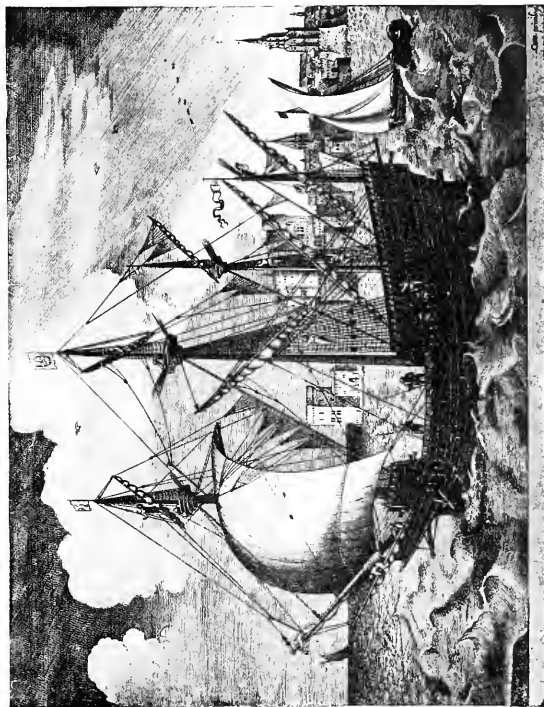


Fig. 135.

(Bouget.)



Fig. 136.

JONAS TE WATER GELATEN (1518-1525).

Naarden (Holland).

JONAS IM WASSER GEWORFEN.

Naarden (Holland).

JONAS CAST INTO THE SEA.

Naarden (Holland).

JONAS JETÉ A L'EAU (1518-1525).

Naarden (Hollande).

(H. Kleinmann en Co Haarlem)
Holland.

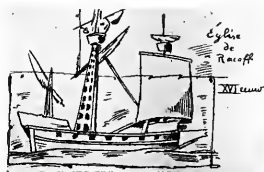


Fig. 137.

SCHIP DER
DIEMERKERK.

(± 1500)

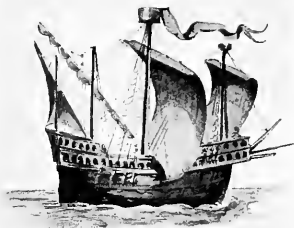
(Nicolas Witsen.)

SCHIFF AUS DER
KIRCHE IN DIEMER.

(± 1500)

(Nicolas Witsen.)

1500



BOAT FROM THE
CHURCH AT DIEMER

(± 1500)

(Nicolas Witsen.)

BATEAU DE
L'ÉGLISE DE DIEMER

(± 1500)

(Nicolas Witsen.)

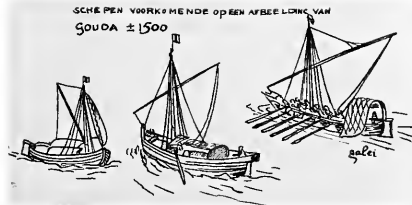
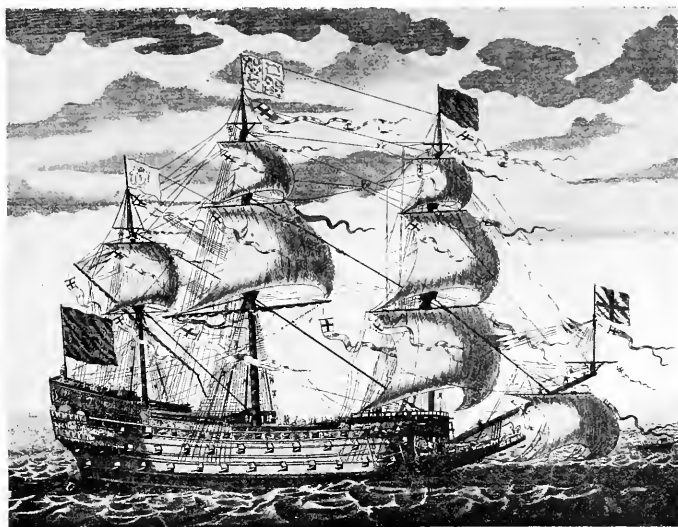


Fig. 139.



KONINKLIJK SCHIP
VAN ENGELAND
17^e EEUW.

ROYAL SHIP
OF ENGLAND
17TH CENTURY.



KÖNIGLICHES SCHIFF
VON ENGLAND
17. JAHRHUNDERT.

BATEAU ROYAL
D'ANGLETERRE
17^e SIECLE.

Fig. 140.

Naar Holbela.
Nach Holbem.
According to Holbein.
D'après Holbein.



Fig. 141.

1520

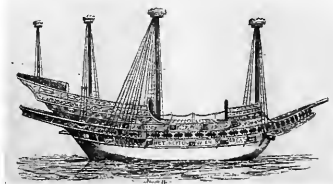


Fig. 142.

1523



Fig. 143.

1594



HOLLÄNDISCHES SCHIFF. 1594. DUTCH SHIP. NAVIRE HOLLANDAIS.



VOR ANTWERPEN (GALLEY). VOR ANTWERPEN (GALLEY). ± 1600 OFF ANTWERP (GALLEY). DEVAINT ANVERS (GALLEY).



Fig. 140.
1626

SCHIP VAN ADMIRAAL TROMP.
(Begin 17^e eeuw.)

SCHIFF DES ADMIRALS TROMP.
(Anfang des 17. Jahrhunderts.)

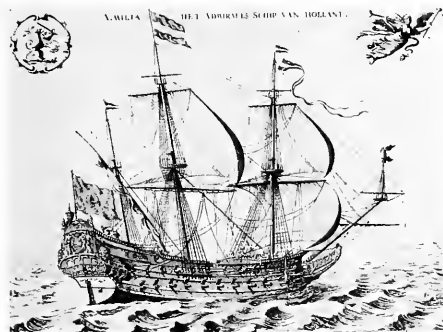


Fig. 147.

ADMIRAL TROMP'S SHIP.
(Beginning of 17th Century.)

VAISSEAU DE L'AMIRAL TROMP.
(Début du 17^e siècle.)

ALTES MODELL DER STADT ZIERICKZEE.
(Anfang des 17. Jahrhunderts.)



Fig. 148.

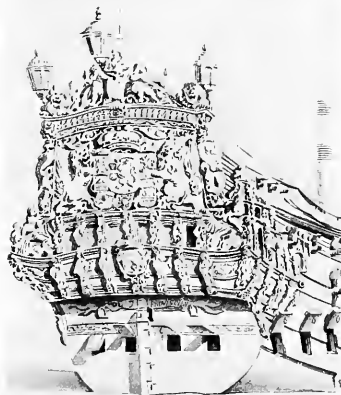
FLUIT, PLAAT VAN 1647.

FLÛTE, STICH AUS 1647. FLUTE, ENGRAVING OF 1647.

FLUTE, GRAVURE DE 1647.

SCHIP VAN ADMIRAAL DE RUYTER.
(Midden 17^e eeuw.)

SCHIFF DES ADMIRALS DE RUYTER.
(Mitte des 17. Jahrhunderts.)



De Admiral de Ruyter's vlaggschip in 1672, 1673 en 1674.

Fig. 150.



Fig. 149.

OLD MODEL VAN DE STAD ZIERICKZEE.
(Begin 17^e eeuw.)

OLD MODEL OF THE CITY OF ZIERICKZEE. (Beginning of the 17th Century.)

ANCIEN MODÈLE DE LA VILLE DE ZIERICKZEE. (Début du 17^e siècle.)

ADMIRAL DE RUYTER'S FLAG SHIP.
(Middle of the 17th Century.)

VAISSEAU DE L'AMIRAL DE RUYTER.
(Milieu du 17^e siècle.)

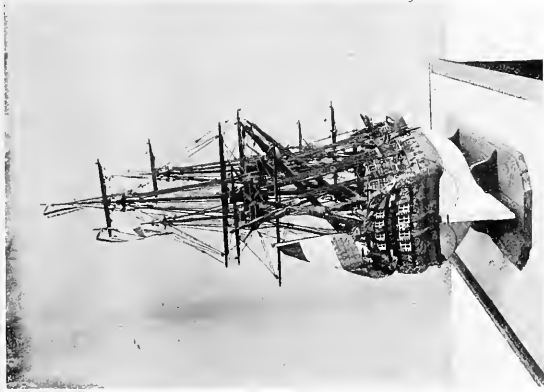


Fig. 151.

O. I. COMPAGNIE SCHIP
(begin 18^e eeuw).

SCHIFF DER OST-INDISCHEN COMPAGNIE
(Anfang des 18. Jahrhunderts).

NAVIRE DE LA COMPAGNIE DES INDES
(commencement du 18^e siècle).

SHIP OF EAST INDIA COMPANY
(beginning of 18th Century).

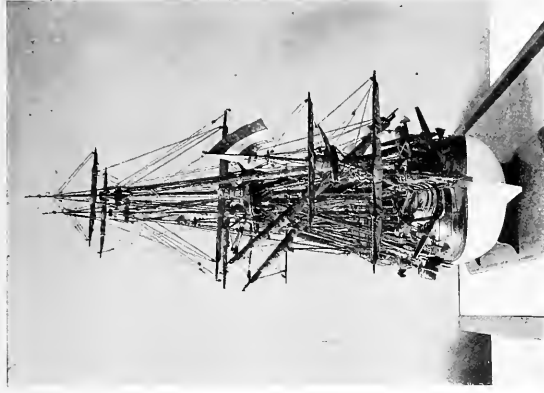


Fig. 152.

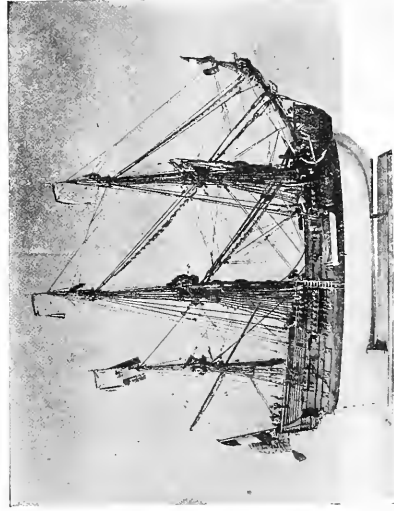


Fig. 153.

Verancling van
Mr. van Gijn, Dordrecht.

Samburg des Herrn
van Gijn, Dordrecht.

Collection of Mr. van
Gijn, Dordrecht.

Collection de M. van
Gijn, Dordrecht.

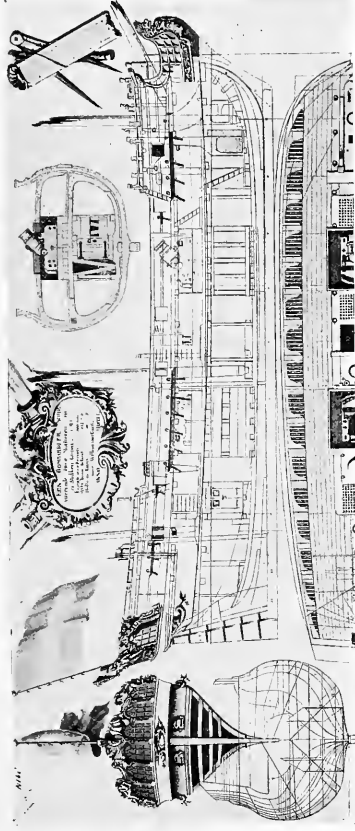


Fig. 134

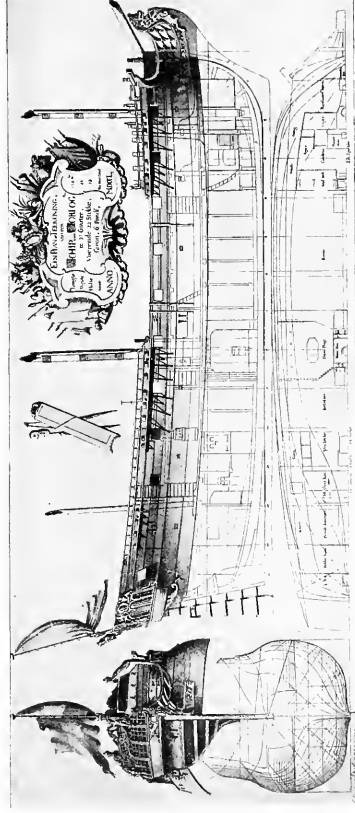


Fig. 135

KRIEGSSCHIFFE. SCHIP VAN OORLOG.
1750. MAN OF WAR.
VAISSEAUX DE GUERRE.

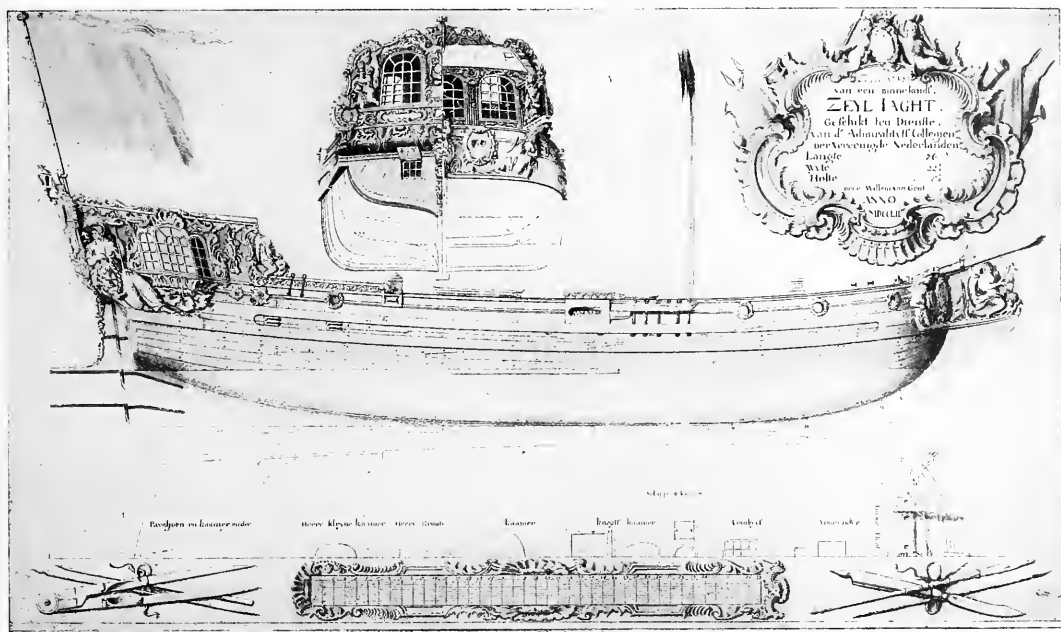


Fig. 130

ZEILJACHT

SEGELYACHT.

1752.

SAILING YACHT.

YACHT A VOILES.

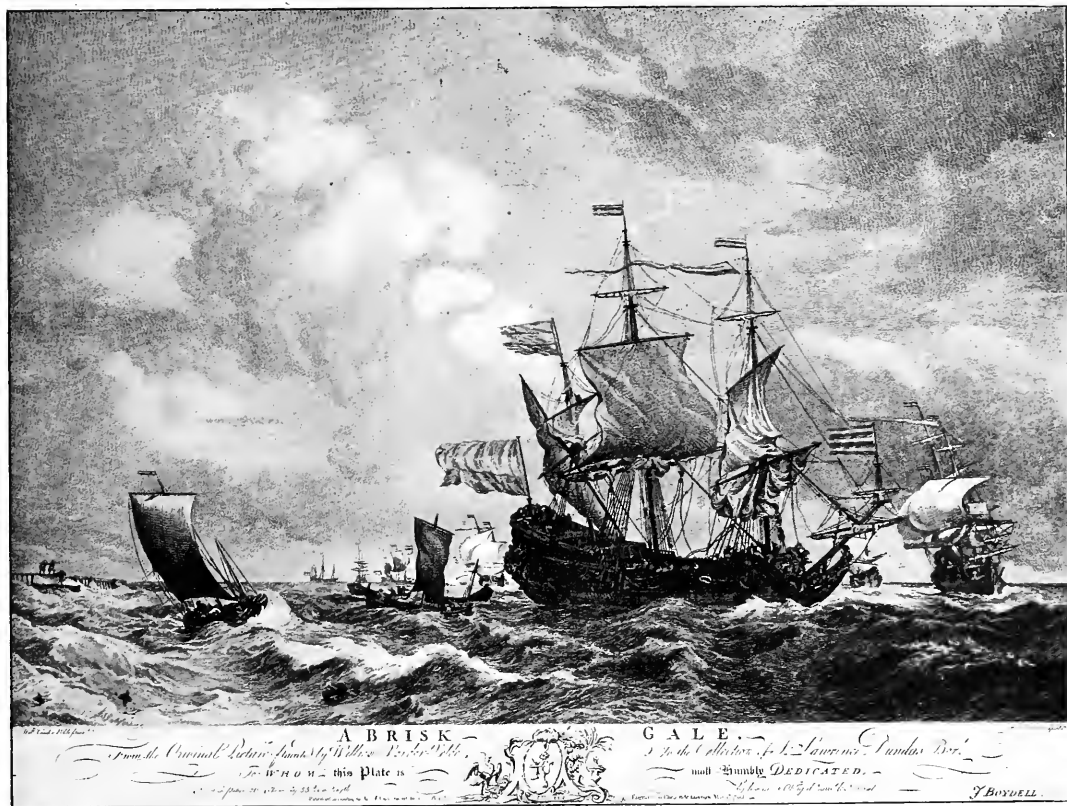


Fig. 157.

• EGMONDERPINK.

1765

SCHIP VAN OORLOG

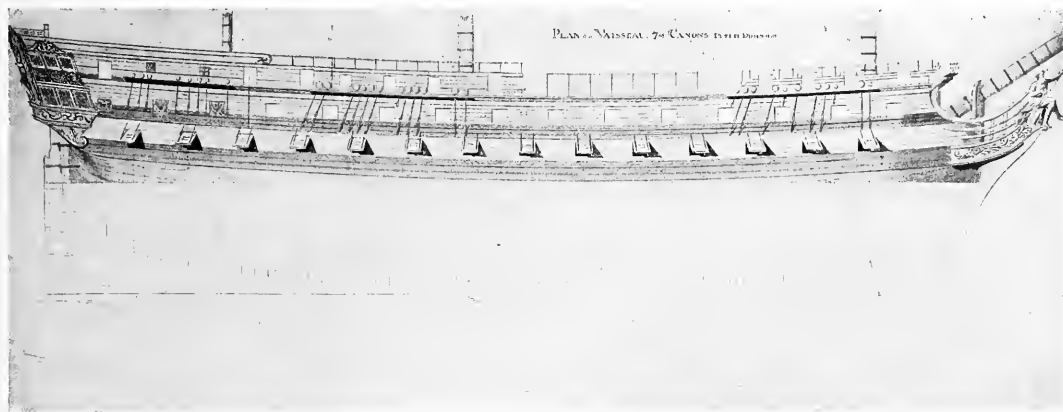


Fig. 158



Fig. 159

SNAUWSCHIP.
(Einde 18^e eeuw)

SCHNAUSCHIFF. RIND.
(Einde des 18. Jahrhunderts.) (End of the 18th Century.)

SENEAU.
(Fin du 18^e siècle.)

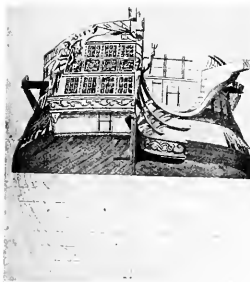


Fig. 160.



(Begin 19^e eeuw)
(Anfang des 19. Jahrhunderts.) (Beginning of 19th Century.)
(Début du 19^e siècle.)



Fig. 161.

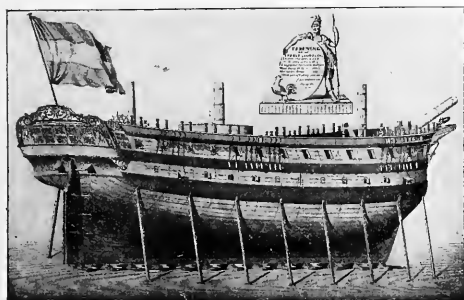


Fig. 162.

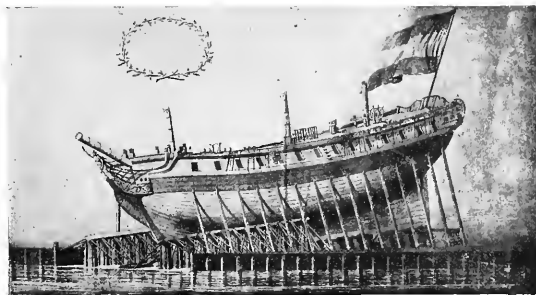


Fig. 163

BEGIN 19^e EEUW. BEGINNING OF THE 19TH CENTURY.
 ANFANG DES 19. JAHRHUNDERTS. DÉBUT 19^e SIECLE.

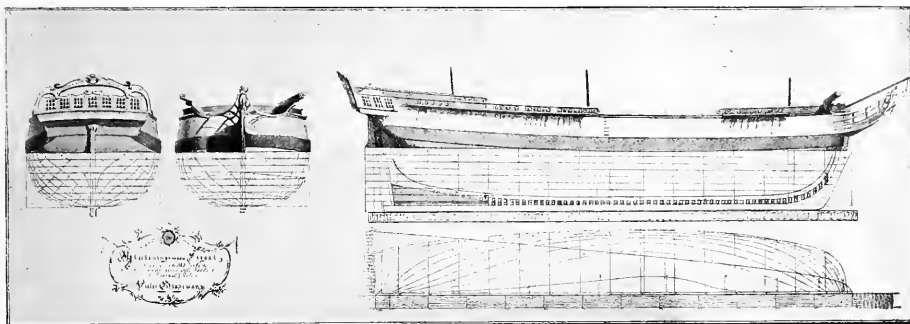


Fig. 104.

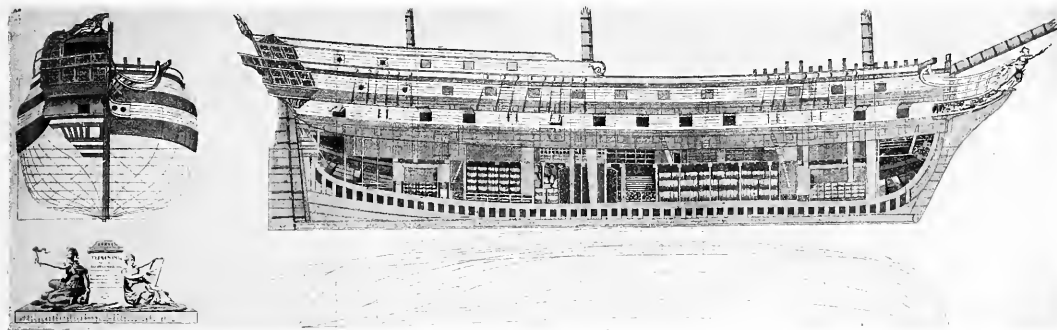


Fig. 105.

BEGIN 19^e EREU.

ANFANG DES 19. JAHRHUNDERTS.

BEGINNING OF THE 19TH CENTURY.

DÉBUT DU 19^e SIÈCLE.



Fig. 166.

1700

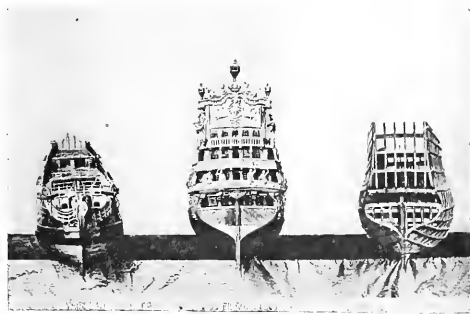


Fig. 167.

1780

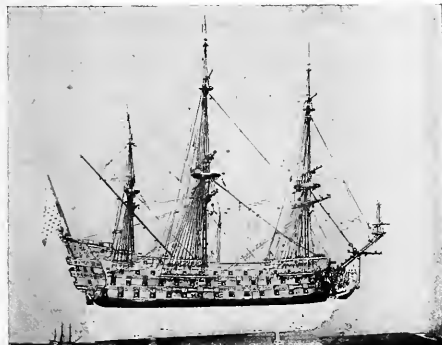


Fig. 168.

1690

FRANKRIJK.

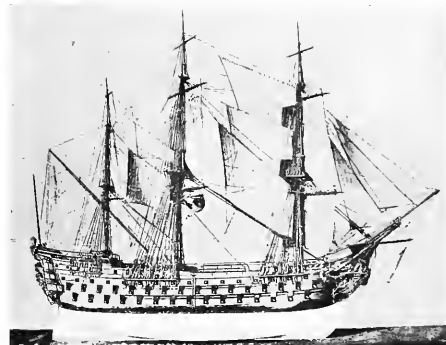


Fig. 169.

1690

FRANCE.

FRANKREICH.



Fig. 170

1808-1827

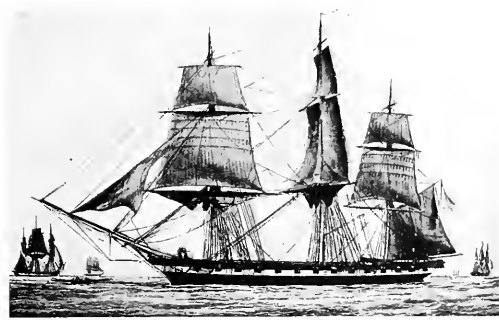


Fig. 171.

1829



Fig. 172

1804

FRANKRIJK.

FRANKREICH.

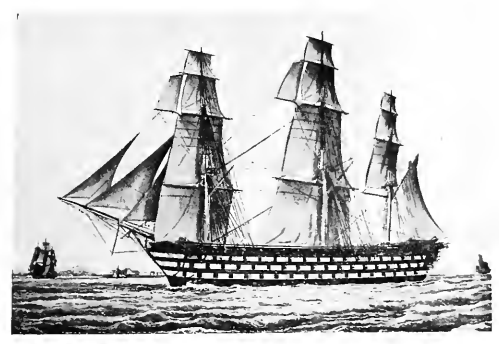


Fig. 173.

FRANCE.

1847

VERSCUIT.

BAC.

FAIRE.

FERRY.



*Ein kleine Bootschiff, durchsicht, in England, verfahren.
Das Boot, was das große
Schiff, über den Fluss, zu
überfahren, ist ein kleines Boot.*

Fig. 174.

Fig. 175.



Ein kleine Bootschiff, durchsicht, in England, verfahren.

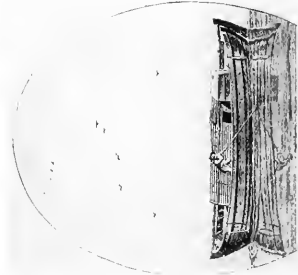
LICHTER.

LEICHTER.

LICHTER.

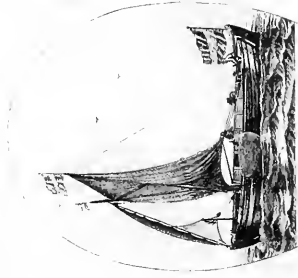
ALLEG.

Fig. 176.



*Ein kleine Bootschiff, durchsicht, in England, verfahren.
Das Boot, was das große
Schiff, über den Fluss, zu
überfahren, ist ein kleines Boot.*

Fig. 177.



*Ein kleine Bootschiff, durchsicht, in England, verfahren.
Das Boot, was das große
Schiff, über den Fluss, zu
überfahren, ist ein kleines Boot.*

Fig. 178.

Beginn 17. eeuw.
Anfang des
17. Jahrhunderts.
Beginning of the
17th Century.
Début 17. siècle.



Yves d'Yvetot Schuyten.

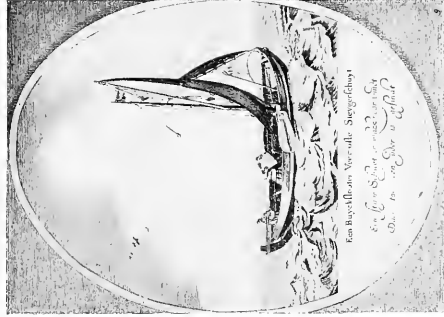
Fig. 179.

WATERSHIP.

SEKAMEEL.

WATERBOAT.

Begin 17^e eeuw.
Beginning of the 17th century.



Anfang des 17. Jahrhunderts
Début du 17^e siècle.

Fig. 180.



Van Waterscheide van Lantfaden.

Ein Bremerse. Wäcker-Schiff.

Fig. 181.

STEGERSCHUITEN.

κ_{AAG}

Hoy.



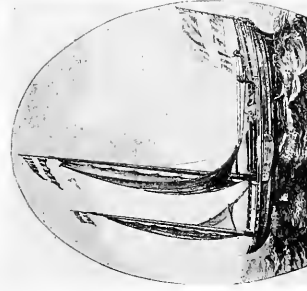
$\frac{1}{2} \frac{d}{dt} \left(\frac{1}{2} \frac{d}{dt} \right)$

62

Environ Monit Assess (2008) 142:115–124

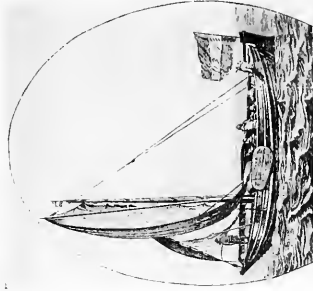
Dear Sir,
I have the honor to acknowledge the receipt of your letter of the 10th inst. and in reply to inform you that the same has been forwarded to the proper authorities for their consideration.

Exquisite



Een Levende Voor-Name

Der Herr General von Manteuffel

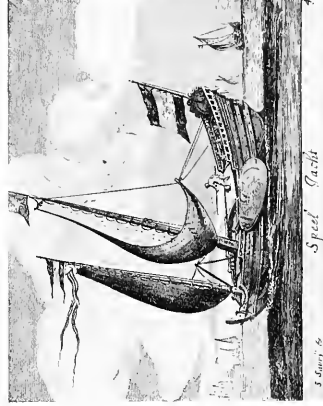


2000

ZEILACH.

SIGHTLY YACHT. — SAILING YACHT.

YACHT A VOILES.



2007

ZELJACHT.

SECKLYACH.

SAILING YACHT.

YACHT A VOLLES.



En Daghboot gaat ontbreekt te Liff.

Fig. 187.
DOGHBOOF.

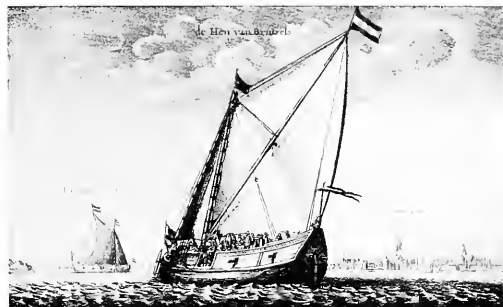
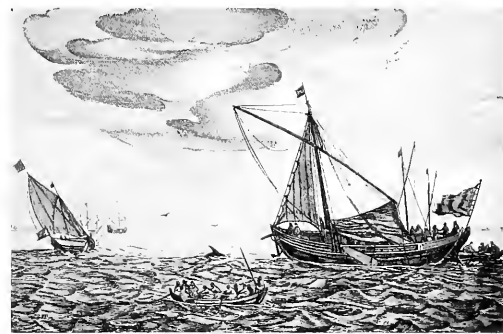


Fig. 188.
HEUDE (HEU).



De Heude is een groot schip.

Fig. 189.
HEUDE (HEU).



De Kogge is een groot schip.

ZEEUWSCHE KOGGE.
ZELAND COG.

Fig. 190.

ZEELÄNDISCHE KOGGE.
COGUE ZELANDAISE.



Een klein bootje op zee.

Fig. 101.



Een Bootje op zee.

Fig. 102

BOUW.

BOUWERS.

TENDERS.

BOUWERS.

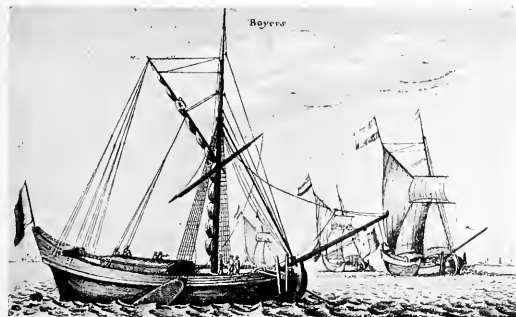
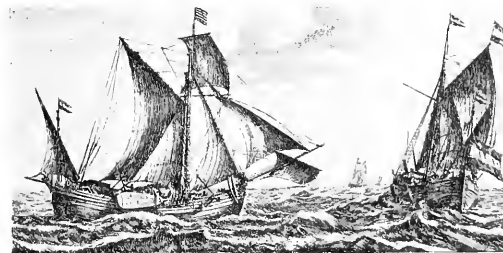


Fig. 103.



Een Booyer.

Een Galoot.

Fig. 104



Fig. 195.

HARINGVLOOT OF ZEE.
HÄRINGSFLOTTE AUF SEE. HERRING-FLEET ON THE OPEN SEA.
FLOTTE POUR LA PÊCHE DU HARENG EN PLEINE MER.



Fig. 196.

BUYS DER ZUIDERZEE.
BOÛE DES ZUIDERZEE. BUSS FROM THE ZUYDER-ZEE.
BOÛE DU ZUIDERZEE.



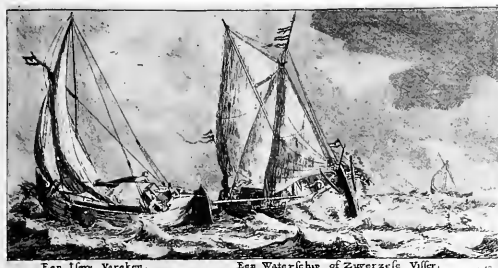
Fig. 197.

BUYS. BUSE. BUSS. BUSE.



Fig. 198.

HARINGVLOOT IN ZEE.
HÄRINGSFLOTTE AUF SEE. HERRING FLEET ON THE OPEN SEA.
FLOTTE POUR LA PÊCHE DU HARENG EN PLEINE MER.



Een Ilove Varenen.

Een Waterschip of Zuerzele Vissers.

Fig. 199.

WATERSCHIP.
SEEKAMEEL. — WATERBOAT.



Tocht Schuyten of Sparendammer Vissers.

Fig. 200.

TOCHTSCHIP. — TRECKSCHUIF.



Top aus Overysseel. — Pot from Overysseel.

Fig. 201.

OVERYSSELSCHIE POT.
TOP AUS OVERYSSEL. — POT FROM OVERYSSEL.
POT DE L'OVERYSSEL.



DE WALVISCHVAARDER.

Fig. 202.

WALVISCHVAARDER.
WALFISCHFÄNGER. — WHALE BOAT.
BALEINIÈRE.

LIJKBAREN VAN WORKUM, WAAROP DE SCHEPEN DER ZUIDERZEE ZIJN AFGEBEELD (1600).
SÄNFTEN VON WORKUM, AUF DENEN DIE SCHIFFE DER ZUIDERZEE DARGESTELLT SIND (1600).



Fig. 203.



BIERS AT WORKUM, ON WHICH ARE SHOWN VESSELS OF THE ZUIDER-ZEE (1600).
CIVIERES A WORKUM, SUR LESQUELLES ON A REPRÉSENTÉ LES NAVIRES DU ZUIDERZEE (1600).



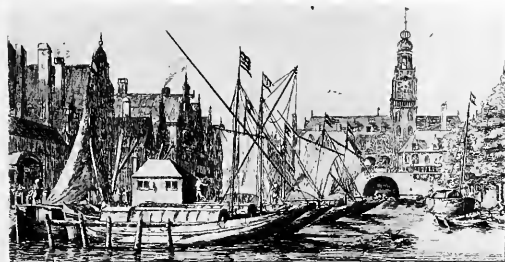
Fig. 202.



Fig. 203.



A° 1600.



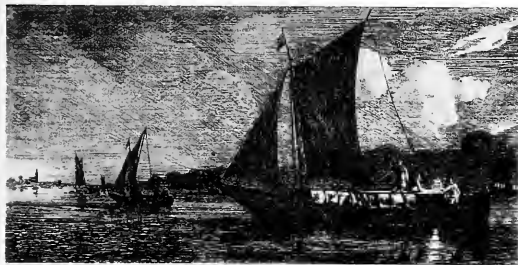
Het Rokin, met de Beurs,

Fig. 204.



Haarlem, laegheuytes

Fig. 205.



Haarlem, Rotterdam, Schiedam, Nacht-Schuyten

Fig. 206.



Den Oevertoom.

Fig. 207.

OUDE HERNA.

(Verzameling M^r Van Gijn, Dordrecht.)

OLD HERNA.

(Collection of M^r. Van Gijn, Dordrecht.)



ALTE HERNA.

(Sammlung des Herrn Van Gijn, Dordrecht.)

ANCIEN HERNA.

(Collection de M. Van Gijn, Dordrecht.)

Fig. 208.

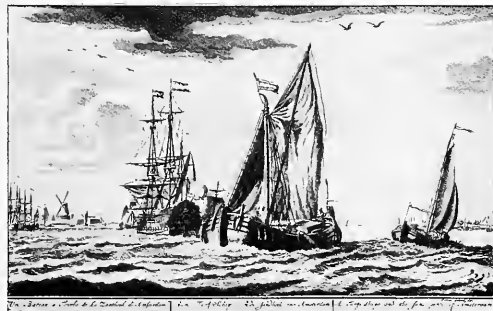


Fig. 209.

TURFSCHIP. TOKESCHIFF. TURF BOAT. BATEAU TOURPIER.

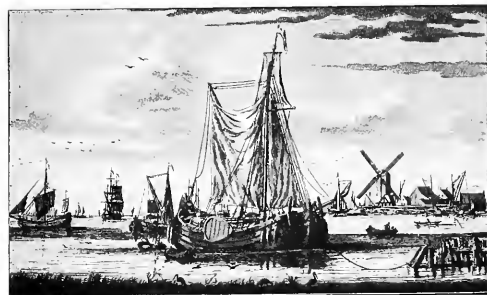


Fig. 210.

SMALSCHIP.



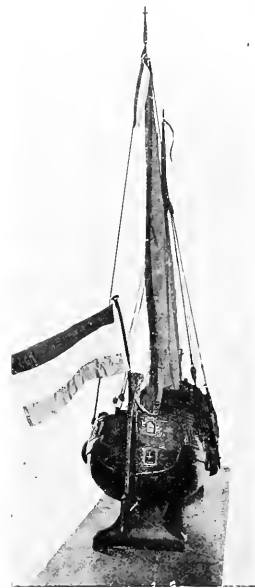
« BEURTSCHIP ».
(Aleriumsmuseum in Dordrecht.)



Fig. 211

BEURTSCHIP.
(Museum van oudheden te Dordrecht.)
(Paviljoen Poon.)

« BEURTSCHIP ».
(Museum of antiquities at Dordrecht.)



« BEURTSCHIP ».
(Musée d'antiquités de Dordrecht.)

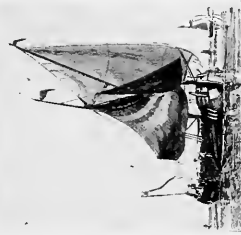


Fig. 212.
DAMLOOPPER.

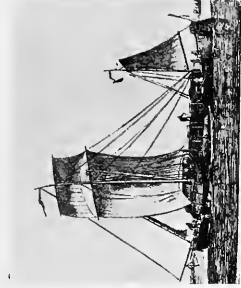


Fig. 213.
EEN SAMMOREUS OF
UN « SAMOREUS » OU « KEULENAAR ».

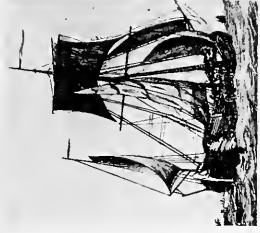


Fig. 215.
SCHACK.
SEMAQUE.



Fig. 217.
KAT.
CHAT.



Fig. 214.
EEN SAMMOREUS OF
UN « SAMOREUS » OU « KEULENAAR ».

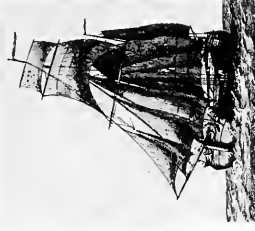


Fig. 216.
KOFF.
KOFF.



Fig. 219.
SCHUTTE ZUM SCHULLENFANG.
BOAT FOR SOLE FISHERY.
BARQUE POUR LA PÊCHE DE LA SOLE.



Fig. 210.
SCHACK.
SEMAQUE.



Fig. 220.

SCHOLSCHUIT.
BOAT FOR SOLE FISHERY.
BARQUE POUR LA PÊCHE DE LA SOLE.

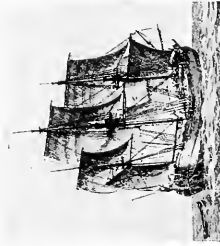


Fig. 225.

DREMAST GAJOOT.
GALLOT MIT DREI MASTEN.
THREE MASTED GALLOT.
GALLOTE A TROIS MÂTS.



Fig. 222.

BOYSCONVOYER.
GELEITSCHIFF FÜR BUSSEN.
CONVOY-SHIP FOR BUSES.
CONVOYEUR DE BUSES.

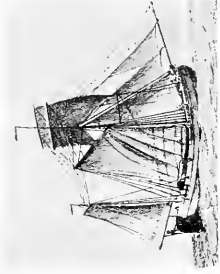


Fig. 226.

ENKMAST GAJOOT.
GALLOT MIT EINEM MAST.
SINGLE MASTED GALLOT.
GALLOTE A UN MÂT.

Fig. 221.

KOPPAARDHUIS.
KAUFFAHRTIG-BUSE. MERCHANT BUSE.
BUSE MARCHANDE.



Fig. 223.

BOYS (ENKUIZEN) DE VLEET INHALIENDE.
BUSE VON ENKUIZEN DIE NETZE EINZIEHEND.
ENKUIZEN BUSE TAKING IN NETS.
BUSE D'ENKUIZEN RETIRANT SES FILETS.

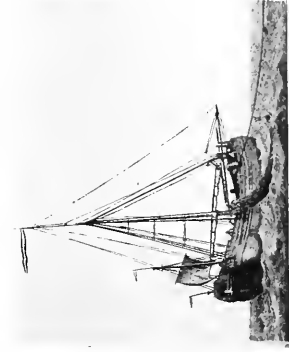


Fig. 224.

BOYS (VLAARDINGEN) DE VLEET UTSCHIEIENDE.
BUSE VON VLAARDINGEN DIE NETZE AUSLEGEND.
VLAARDINGEN BUSE CASTING NETS.
BUSE DE VLAARDINGEN LANÇANT SES FILETS.

Fig. 227.

HOEKER MET BAKENTJUNSTUIG.
HUKER MIT BERKENTAKELUNG. BARK RIGGED HOWKER.
HOUKQUE AVEC GRÉEMENT DE BARQUE.

HUKER.

HOEKER.

HOUKQUE.



Fig. 231.

BOYS.
BOSE.
BOSE.

Fig. 232.

JAGER.
JAGER.
CHASSEUR.

Fig. 233.

VISCHHOEKER.
FISCHHUKER. FISHING HOWKER.
HOUKQUE DE PÊCHE.

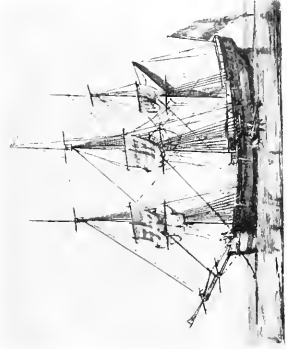


Fig. 239.

DRIEMAST HOEKER.
HUKER MIT 3 MASTEN. THREE MASTED HOWKER.
HOUKQUE A 3 MÂTS.

Fig. 243.

PINKSCHIP.

Fig. 234.



MODELL EINES HUKERS.

(Sammlung des Herrn van Gijn, Dordrecht).



MODEL VAN EEN HOEKER.

(Verzameling van M^r van Gijn, Dordrecht).

MODEL OF A HOWKER.

(Collection of M. van Gijn, Dordrecht)



MODELE D'UNE HOURQUE.

(Collection de M. van Gijn, Dordrecht)

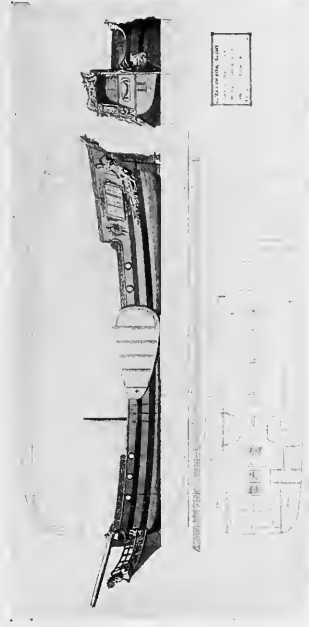


Fig. 255.
Zeeruwch Yacht. Zeelandsche Yacht. Yacht zélandais.

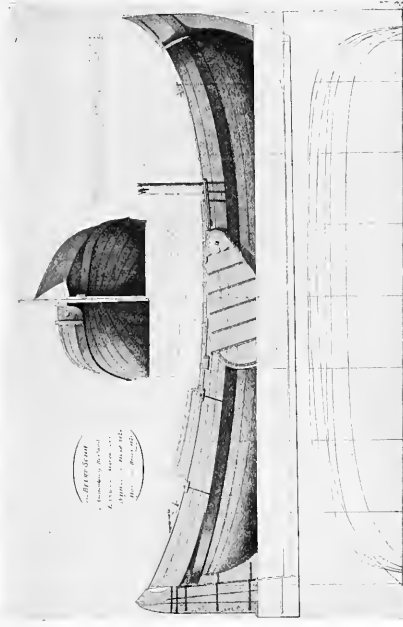


Fig. 256.
Beurtschip. (Poon)

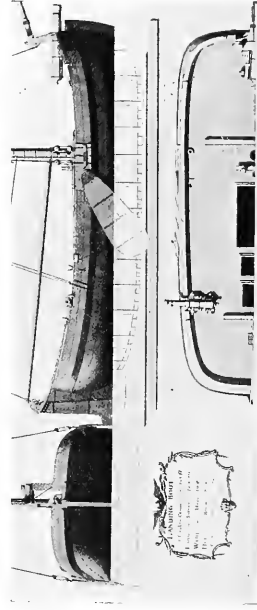


Fig. 257.
Landingsboot. Landing boat. Bateau de débarquement.

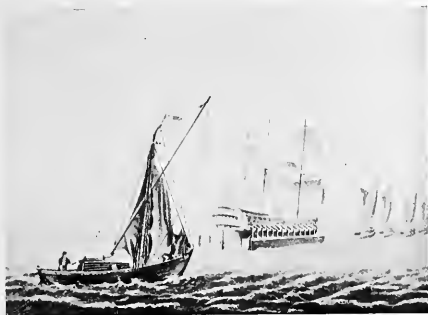


Fig. 238.

SEESCHIP MET ZEEKAMEEL DOOR WATERSCHEEPJES OVER HET PAMPUS GETROKKEN.
ZEESCHIFF VON WASSERSCHIFFEN (SEEEKAMEELEN) ÜBER DEN PAMPUS GESCHLEPPT.
SEA-GOING SCHIP FLOATED OVER THE PAMPUS SHOAL ON « SEA CANNELS ».

BATIMENT DE MER PORTÉ PAR UN « ZEEKAMEEL » REMORQUÉ PAR DES
« WATERSCHEEPJES » AU-DESSUS DE PAMPUS.



Fig. 239.

GALEAS.

GALEASSE.

GALLIAS.

GALÉASSE.



Fig. 240.

SNIK.



Fig. 241.

EVER.



Fig. 242.

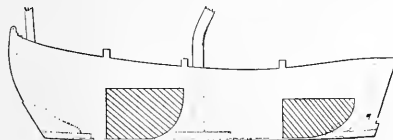


Fig. 243.

SCHUIT VAN BLANKENBERGHE.
SCHUTE VON BLANKENBERGHE. BLANKENBERG BOAT.
BARQUE DE BLANKENBERGHE.



Fig. 244.

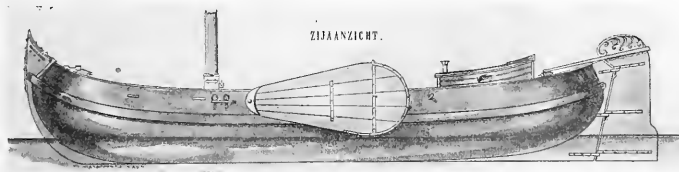
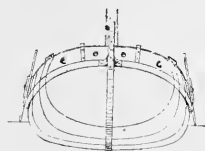


Fig. 245.

BLOKZIJLDER JACHT.



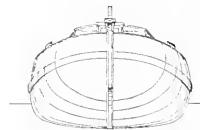
VOORAANZICHT

VORDERANSICHT FRONT VIEW
VUE D'AVANT



BOVENAANZICHT.

PLAN. AUF SICHT.



ACHTERAANZICHT

HINTERANSICHT STERN VIEW
VUE D'ARRIERE



SLIJKPKAAM.

BAGGERPKAAM.

(GRONINGEN)

DREDGING BARGE.

CHALAND DE DRAGAGE.

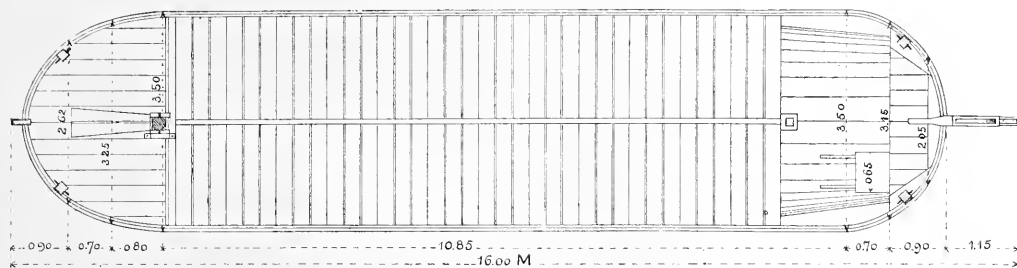
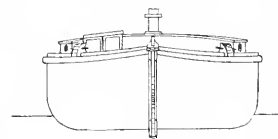
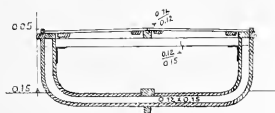
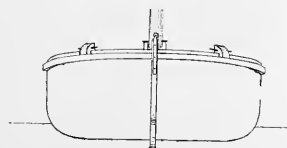
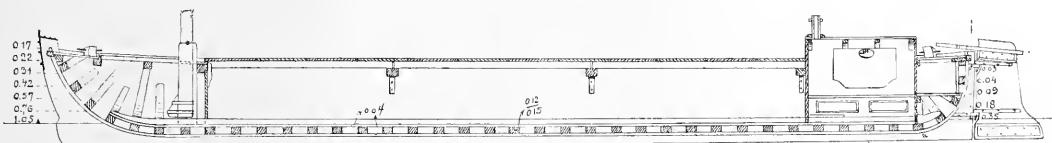


Fig. 240



FRIESCH BOOTJE.
FREESCHIES BOOT. SMALL FRISSIAN BOAT.
BARQUETTE FRISONNE.

FRIESCH BOOTJE.

Seitenansicht.
Side view.
Vue de côté.



VOORANZICHT.



Vorderansicht.
Front view.
Vue de face.

Aufsicht.
Plan.



ACHTERANZICHT.



Hinteransicht.
Stern view.
Vue postérieure.

Längsschnitt.
Longitudinal section.
Coupe longitudinale.



DWARSDOORSNED.



Querschnitt.
Cross-section.
Coupe transversale.

SCHEMATEL.

Fig. 247.

YLS TERBOOT.
BOAT FROM THE YLS TER.
BATEAU DE L'YLS TER.

YLS TERBOOT.

Seitenansicht.
Side view.
Vue de côté.



ZIJANZICHT.



VOORANZICHT.

Vorderansicht.
Front view.
Vue de face.

Längsschnitt.
Longitudinal section.
Coupe longitudinale.



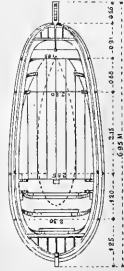
LENGTE DOORSNED.



DWARS DOORSNED.

Querschnitt.
Cross-section.
Coupe transversale.

Aufsicht.
Plan.



DOVENANZICHT.



ACHTERANZICHT.

Hinteransicht.
Stern view.
Vue postérieure.

VOORANZICHT.

Fig. 248.



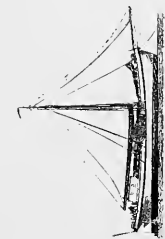


Fig. 42.

YZEREN KLIPPER SCHIP.

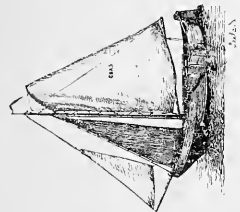


Fig. 39a.

HENGST.



Fig. 39i.

YZEREN KLIPPER SCHIP.



Fig. 39b.

SCHUIT.

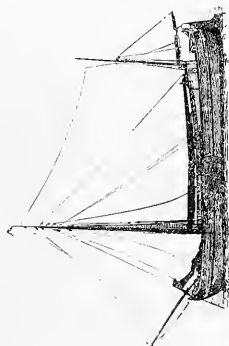


Fig. 253.

OTTER.

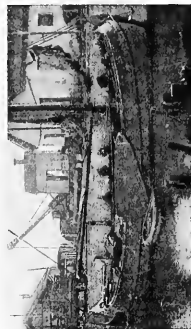


Fig. 254.

SCHUIT.

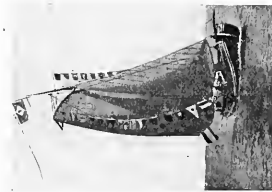


Fig. 255.

BOER.

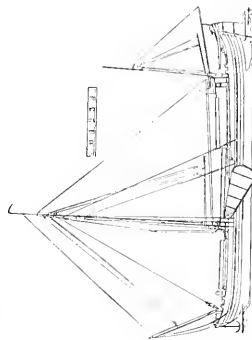


Fig. 39c.

HOLLANDSCHE ANK.

BELGISCHE SCHEPEN.

BELGISCHE SCHIFFE. — BATEAUX BELGES. — BELGIAN CRAFT.

Prahm des Kanals von Charleroi. — Baquet du Canal de Charleroi. — Baquet from the Charleroi Canal.



Fig. 257.

PINASSE VON TOURNAI. — PÉNICHE DE TOURNAI. — TOURNAI BARGE.

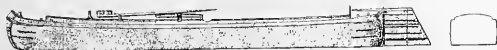


Fig. 258

LEICHTER. — BARGE. — CHALAND.



Fig. 259

BILANDER. — BALINGER. — BÉLANDRE.



Fig. 260.

SPITS. — POINTED. — POINTU (SPITS).



Fig. 261.

POINTU (SPITS).



Fig. 262

TYPE MIT KUGELFORMIGEN RUMPF. — TYPE A CUL SPHÉRIQUE.



Fig. 263.



TYPE MIT ZYLINDRISCHEN RUMPF. — TYPE A CUL CYLINDRIQUE.



Fig. 264



FRANZÖSISCHE SCHIFFE. — BATEAUX FRANÇAIS.
FRENCH VESSELS.

FLUTE. — FLIGHT.



Fig. 265.



Nach den Ingenieur A. Dehem. — According to Engineer A. Dehem.
D'après l'ingénieur A. Dehem.
Annales des Travaux publics de Belgique.
Tome VI, août 1901.

TYPE VAN DE SCHELDE.
 TYP VON DER SCHELDE. — TYPE OF THE SCHELDT. — TYPE DE L'ESCAUT.



Fig. 266.

TYPE - DORTMUND-EMSKANAAL.

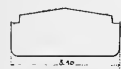
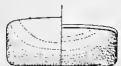


Fig. 267.



SCHIFFSTYPER VOM DORTMUND-EMS-KANAL. — TYPES OF BOATS ON THE DORTMUND-EMS-CANAL.
 TYPES DE BATEAUX DU CANAL DE DORTMUND A L'EMS.

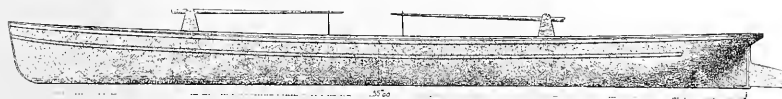


Fig. 268.

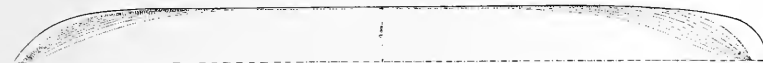
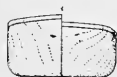




Fig. 256

LOGGER MET WESTLANDER.
LOGGER WITH WESTLANDER.
LOGRE AVEC WESTLANDER.



Fig. 270.

BOM.
LOGGER, LOGRE.
(VLAARDINGEN.)

Op welke wijze eertijds de scheveningsche bommen in zee werden gebracht.



Fig. 271.

Wie die bommen von scheveningen früher zu wasser gebracht wurden.

FORMER LAUNCHING OF
« BOMMEN » AT SCHEVENING.

MISE EN MER DE JADIS
DES « BOMMEN » DE SCHEVENINGUE.



Fig. 272.

OUDE KOTTER.
ALTER KUTTER. OLD-TIME CUTTER.
ANCIEN CUTTER.



Fig. 273.

HOOGGAARS.



Fig. 274.

OUDE MODDERMOLEN.
ALDER KUTTER. OLD TIME DREDGE.
ANCIEN CURE-MÔLE.



Fig. 275.

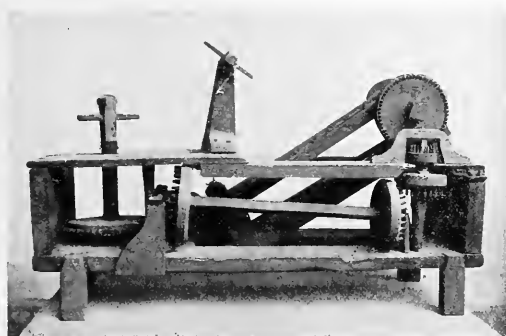


Fig. 276.

MODEL MODDERMOLEN (STADHUIS TE HOORN).
MODELL-KUTTER. HOORN. MODEL OF A DREDGE.
MODELE D'UN CURE-MÔLE (HÔTEL DE VILLE DE HOORN).

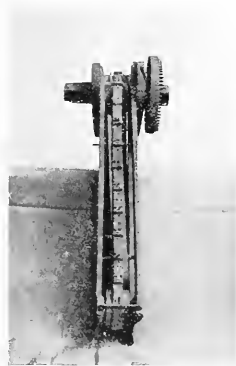
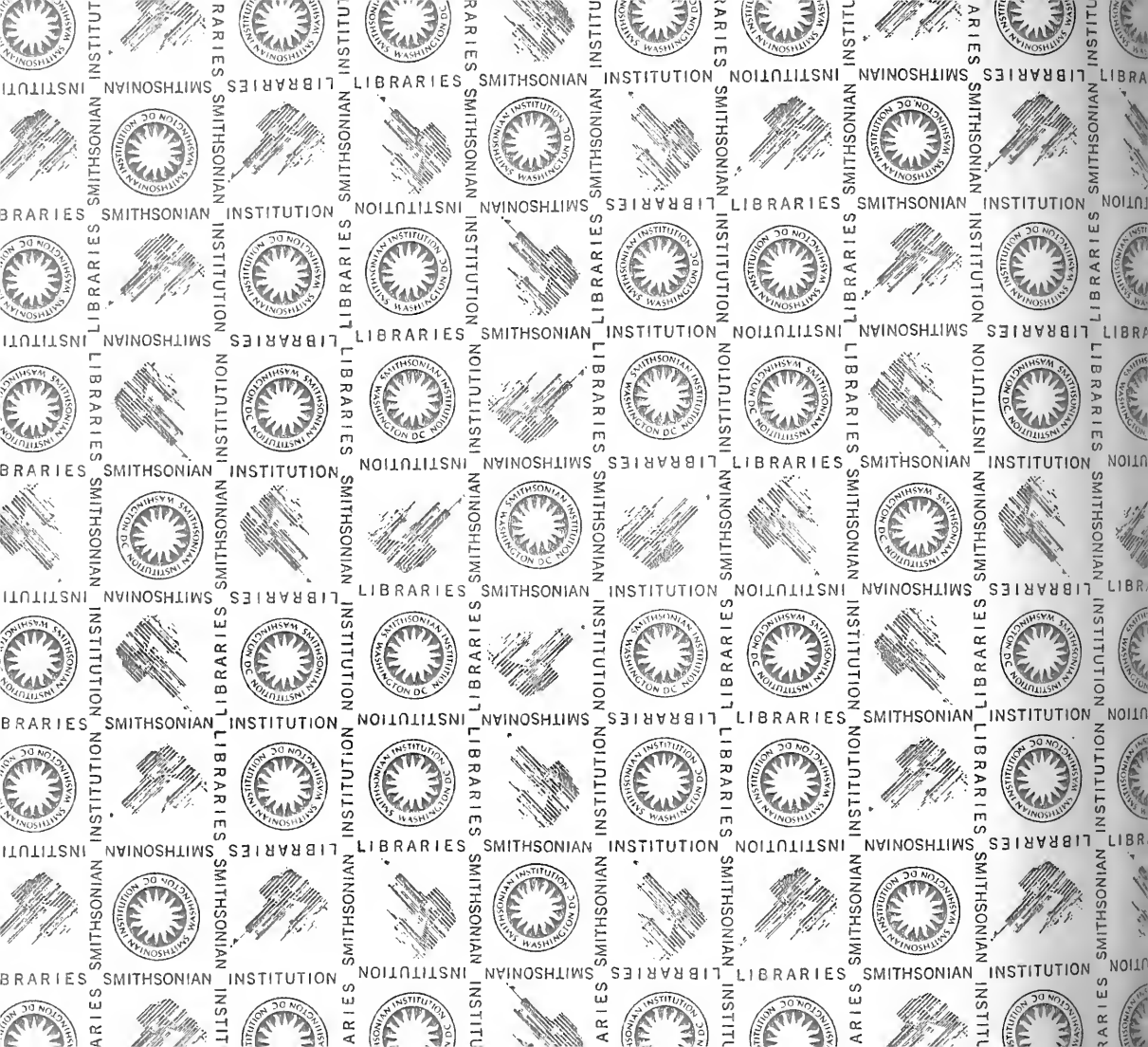
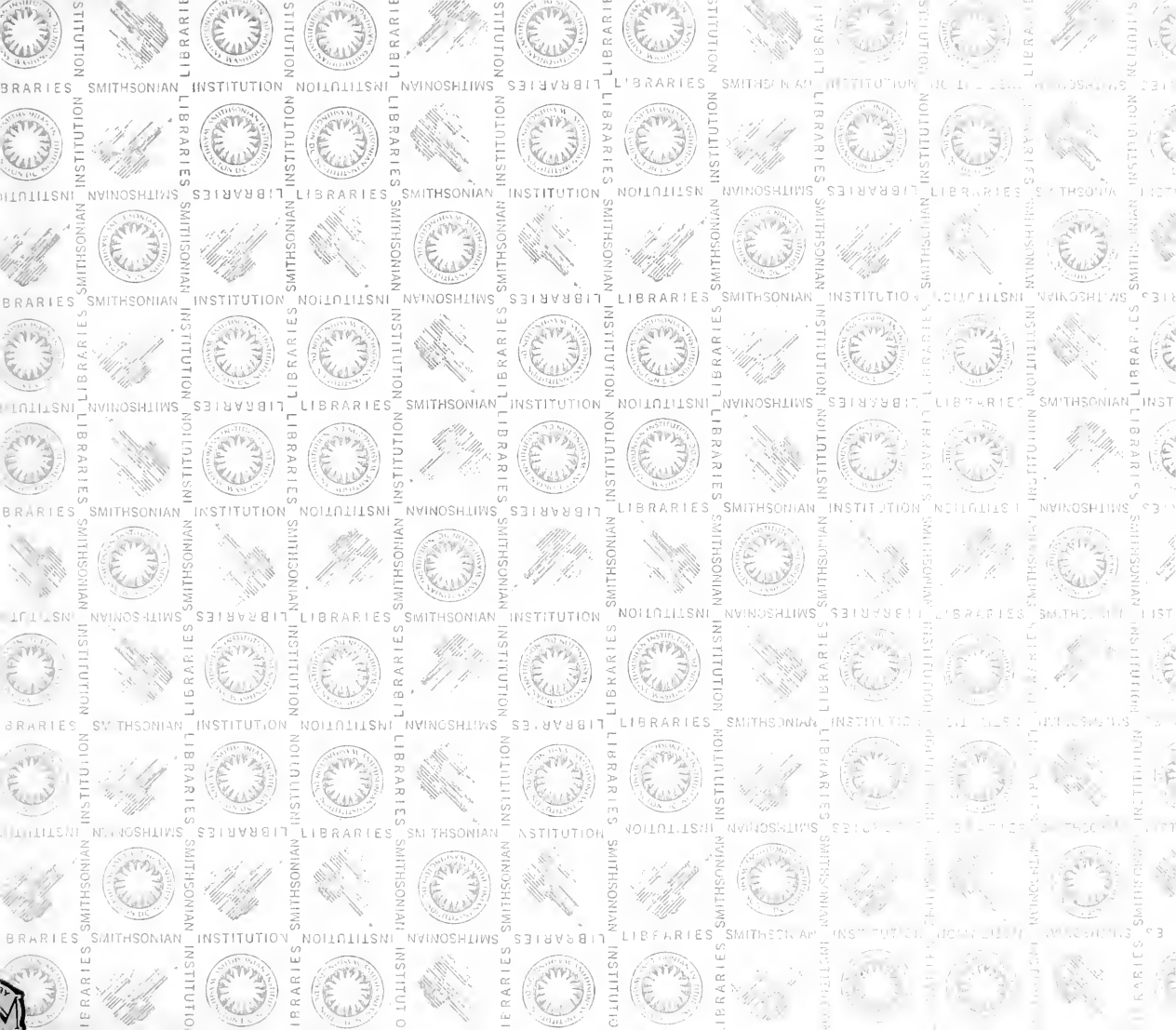


Fig. 277.





SMITHSONIAN INSTITUTION LIBRARIES



3 9088 00444152 3

nmah VM15.K82

v. 2 Shipbuilding from its beginnings.